Overview of Trends in

Canadian mineral exploration

CANADIAN INTERGOVERNMENTAL WORKING GROUP ON THE MINERAL INDUSTRY

2006

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Canadian mineral exploration

Canadian Intergovernmental Working Group
on the Mineral Industry

2006

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The cover photo shows one of six helicopter-supported drill rigs that Aurora Energy Resources Inc. had operating in coastal Labrador on its Central Mineral Belt uranium project. Environment and Community Relations manager, Sally Howson, is seen in the foreground using a scintillometer.

2007-01694/

Preface

The *Overview of Trends in Canadian Mineral Exploration* report is prepared annually, on behalf of the Intergovernmental Working Group on the Mineral Industry (IGWG), for presentation to federal, provincial and territorial mines ministers. It contains an analysis of recent indicators of exploration and deposit appraisal activity in Canada, a review of the exploration and deposit appraisal sector of each province/territory, and a review of the worldwide activities of the larger Canadian exploration and mining companies. The information in this report is current as of November 2006.

The analyses, articles and reviews found in this report were prepared by officials from respective provincial/territorial departments responsible for mineral exploration and from Natural Resources Canada (NRCan). The Minerals and Metals Sector of NRCan was responsible for compiling, editing, producing and distributing this report, which covers exploration and deposit appraisal activities for metallic minerals, nonmetallic minerals, coal, and uranium. It does not refer to petroleum-related work.

The report is available on the Internet at www.nrcan.gc.ca/mms/pubs/explor_e.htm.

NOTE TO READER

This report has been prepared on the basis of information available at the time of writing. The authors make no warranty of any kind with respect to the content and accept no liability, either incidental, consequential, financial or otherwise, arising from the use of this document.

Government Contacts/ Information Requests

For further information on specific issues related to this report (i.e., exploration activities and statistics, incentives and programs, rules and regulations, geoscientific data, etc.), the reader is invited to contact the appropriate federal, provincial or territorial authorities at the telephone numbers listed below or to consult their respective web sites. The contact information for officials who prepared the provincial/territorial sections is also provided at the beginning of each of these sections while the NRCan officials who participated in the preparation of this report are listed below. Prince Edward Island is not included because of a current lack of mineral exploration activity.

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Executive Summary

Statistics from the federal-provincial/territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures show that 2006 was another excellent year for the Canadian mineral exploration sector.

In fact, 2006 revised company spending intentions of $1722 million represent the highest total for exploration and deposit appraisal expenditures since the heyday of the Mining Exploration Depletion Allowance (MEDA) in 1987 and 1988. The 2006 spending forecast marks another year of strong growth as spending is expected to increase by a further 32%, after increases of 11% in 2005 and 72% in 2004. In real terms, exploration and deposit appraisal spending in Canada has now been on a strong upward trend since the historical trough of 2000.

The overall context remains very favourable for 2007 as the current period of intense mineral exploration and deposit appraisal activity is showing no sign of abatement. Prices remain strong across a wide range of mineral commodities, capital markets continue to view the industry favourably, and positive exploration results continue to stimulate further activity.

The current growth period has been characterized by the growing importance of off-mine-site and exploration-phase spending, both inside and outside of traditional mining camps. The generally favourable mineral commodity price outlook has led to exploration and deposit appraisal spending being widely distributed among various targets and to the spreading of commodity-specific work, such as for uranium, outside of traditional exploration areas.

The junior mining sector has now emerged as the dominant force in the Canadian mineral exploration and deposit appraisal sector. In 2006, junior company spending is expected to reach $1122 million. Junior mining companies are major spenders in most commodity groups, undertake a large share of drilling activity, and continue to increase their average spending year after year.

The future of mining in Canada will no doubt be shaped by the discoveries, and additions to previously known resources and reserves, that will result from this period of intense activity by the Canadian mineral exploration industry. The Regional Outlook section of this report summarizes the most interesting projects currently under way in this country.

Globally, Canada continues to be the foremost destination for exploration capital. In 2005, some 19% of the mineral exploration programs planned by the world's large and small companies were expected to be conducted in Canada. As for Canadian companies, they were expected to undertake almost 45% of all the exploration programs in the world in 2005, a share that is by far the largest of the global mineral exploration market. Canadian companies were expected to dominate global mineral exploration in 2006 and should continue to do so in 2007.

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ABBREVIATIONS

The reader should note that a number of abbreviations for common units of measurement appear in the text:

ct	carats
ct/ht	carats per hundred tonnes
ct/t	carats per tonne
ft	feet
g	grams
g/t	grams per tonne
ha	hectares
kg	kilograms
km	kilometres
km^2	square kilometres
lb	pounds
m	metres
Mct	million carats
Mha	million hectares
mm	millimetres
Moz	million ounces
Mt	million tonnes
Mt/y	million tonnes per year
MTU	metric tonne unit
oz	troy ounces
ppb	parts per billion
ppm	parts per million
t	tonnes (metric)
t/d	tonnes per day
t/y	tonnes per year

Note: Unless specified otherwise, all dollar figures are in Canadian dollars.

1. Indicators of Mineral Exploration and Deposit Appraisal Activity in Canada

1.1 INTRODUCTION

The first chapter of this report presents data and analysis on indicators of mineral exploration and deposit appraisal activity in Canada. Except where needed for comparing different data sets, it does not cover activities beyond the deposit appraisal stage, such as those related to mine development. The most important indicator is spending and, accordingly, most of the analysis focuses on expenditure trends and patterns. Chapter 1 also provides analysis on two other indicators of exploration and deposit appraisal activity: drilling and claim staking.

The federal-provincial/territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures provides a comprehensive breakdown of the mineral development cycle in Canada. This breakdown is based on the Generalized Model of Mineral Resource Development presented in **Table 21** (Appendix 2). For a better understanding of the survey and its definitions,[1] the reader is also invited to consult Section 1.2 and Appendix 2.

1.2 SUMMARY OF SURVEY DEFINITIONS

In the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures, often referred to as the federal-provincial/territorial survey of mining and exploration companies, *exploration* is defined as all activities carried out to search for, discover and conduct the first delineation (up to and including sufficient indicated mineral resources) of a potential mineral deposit, or the re-evaluation of a known deposit to enhance its potential economic value (tonnage, grade and other characteristics) in order to justify additional and more detailed deposit appraisal work. *Deposit appraisal*, on the other hand, is defined as all activities carried out to bring a delineated deposit to the stage of detailed knowledge required for an exhaustive bankable feasibility study that will fully justify and fully support a production decision and the investment required.

The survey allows a detailed cost breakdown of total exploration and deposit appraisal expenditures into categories that include the traditional field work and overhead costs, but also costs related to engineering, economic and feasibility studies, the environment, and land access. The survey also collects data on capital and repair costs for construction, machinery and equipment for each of the work phases (exploration, deposit appraisal and mine complex development), but these costs will seldom be referred to in this review.

1.3 EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES

Levels of exploration and deposit appraisal expenditures are prime indicators of the state of Canada's mineral exploration sector. They also provide an insight into the future of the country's

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[1] A different set of definitions is used in Chapter 3, which contains data and analysis on worldwide exploration activity and is based on data from the Metals Economics Group.

minerals and metals production capacity. This section of the report contains an analysis of the 2005 and 2006 expenditure data.[2] The data for 2005 are considered to be final. The data for 2006 were first compiled in January 2006 and revised in September 2006. They will be finalized in 2007. This section also provides some coverage of the period 1997-2006. The analysis, figures and tables presented in this chapter are, for the most part, denominated in current Canadian dollars. However, in order to keep an inflation-free perspective, some of the longer-term comparisons are also presented in terms of 2005 constant dollars (using the Gross Domestic Product deflator series).

1.3.1 2005 Exploration and Deposit Appraisal Expenditures

1.3.1.1 Statistical Summary

In 2005, 742 companies (project operators) spent $1302 million ($1305 million when including prospectors) on mineral exploration and deposit appraisal in Canada (**Figure 1** and **Table 1**). That number of companies represented an increase of 5.8% from the 2004 total of 701 companies (expenditures of $1174 million) and a further increase from the low of 504 project operators that was reached in 2000. A total of 231 companies (compared to 187 in 2004) spent more than $1 million each in 2005; these companies' expenditures accounted for 89% of the total expenditures for that year. On an annual basis, projects with spending of $1 million or more usually account for most of the total expenditures (80% or more).

The 11% ($127 million) increase in exploration and deposit appraisal spending that occurred between 2004 and 2005 was not felt throughout the country, as was the case between 2003 and 2004 when all provinces and territories recorded increases in expenditures (**Figure 2** and **Table 2**). Rather, in 2005, British Columbia (+$66 million), Saskatchewan (+$62 million), the Yukon (+$32 million), Manitoba (+17 million), and Newfoundland and Labrador (+$16 million) recorded significant monetary increases over 2004 while Québec (-$22 million), the Northwest Territories (-$16 million), Ontario (-$13 million) and Nunavut (-$9 million) recorded decreases. In percentage terms, the most significant of these decreases was in the Northwest Territories, a decline of 14% when compared to the 2004 total of $112 million. Ontario ($294 million), British Columbia ($218 million) and Québec ($205 million) all recorded spending above the $200 million mark while Nunavut ($179 million) and Saskatchewan ($134 million) also posted impressive totals. Together these five jurisdictions accounted for 79% of total spending in 2005.

Expenditures for off-mine-site exploration and deposit appraisal activity increased by 14% (to $1184 million) from the 2004 level of $1041 million (**Figure 3a**). In constant 2005 dollars, this was the fifth consecutive increase in off-mine-site spending (**Figure 3b**). Overall, 91% of all exploration and deposit appraisal expenditures in 2005 was for off-mine-site activity. As will be discussed in the next section, the main component of off-mine site spending, the off-mine-site exploration work phase, has been on a strong increasing trend since 2000. Ontario once again ranked first in terms of off-mine-site spending with 19% ($223 million) of the total for that category, followed by British Columbia with 17% ($204 million) and Nunavut and Québec with 15% each ($179 million and $177 million, respectively) (**Figure 4**).

After finally showing a strong increase in 2004 (to $137 million), on-mine-site exploration and deposit appraisal expenditures declined to $121 million in 2005. These totals remain below the more robust on-mine-site spending that took place in 1997, the first year of the current survey

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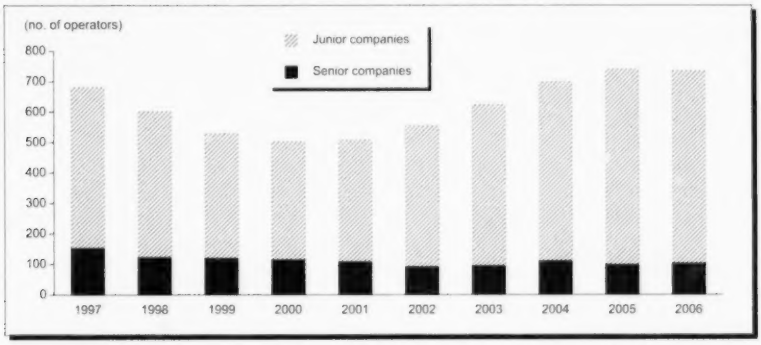
[2] For further analysis of 2005 exploration and deposit appraisal expenditures and a discussion of 2006 spending intentions, see Ginette Bouchard, "Mineral Exploration, Deposit Appraisal and Mine Complex Development Activity in Canada," in the 2005 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa.

Figure 1
Project Operators Active in Exploration and Deposit Appraisal in Canada, 1997-2006



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Notes: Data exclude prospectors and prospector groups. Data up to and including 2005 are final; 2006 data are based on revised company spending intentions as compiled in September 2006.

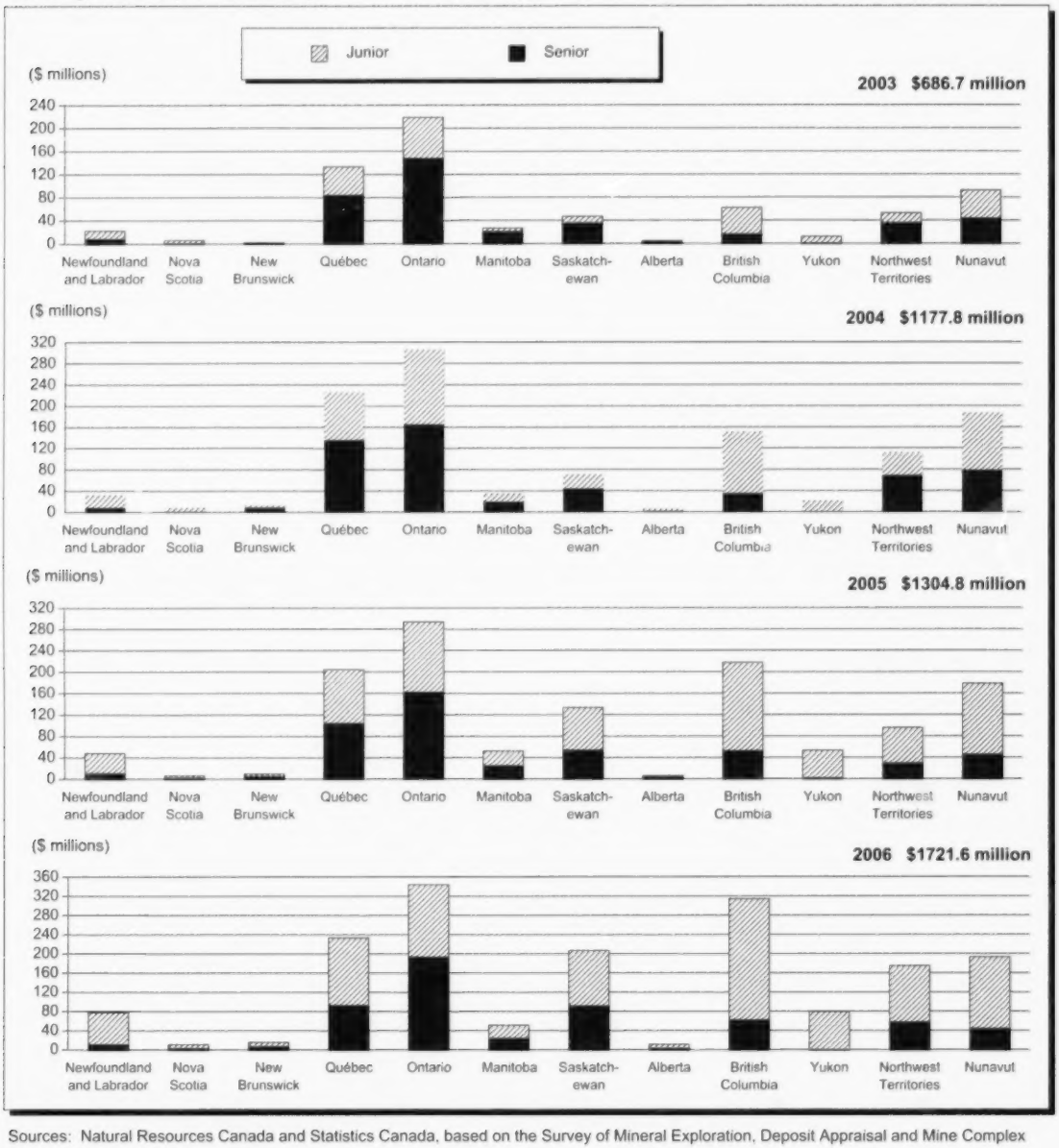
TABLE 1. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES IN CANADA, (1) BY RANGE OF EXPENDITURES AND BY TYPE OF COMPANY, 2003-06 (Current Dollars)

Range of Expenditures	Junior			Senior			Total		
	Companies	Expenditures	Percentage of Total Expenditures	Companies	Expenditures	Percentage of Total Expenditures	Companies	Expenditures	Percentage of Total Expenditures
($)	(number)	($000)	(%)	(number)	($000)	(%)	(number)	($000)	(%)
2003									
>10 million	–	–	–	12	261 891	65.0	12	261 891	38.1
5 million-10 million	8	60 146	21.2	14	93 128	23.1	22	153 274	22.3
1 million-5 million	66	127 868	45.1	15	36 807	9.1	81	164 676	24.0
500 000-1 million	59	40 660	14.3	10	6 547	1.6	69	47 206	6.9
200 000-500 000	105	33 910	12.0	6	2 179	0.5	111	36 089	5.3
100 000-200 000	76	10 662	3.8	9	1 386	0.3	85	12 048	1.8
50 000-100 000	72	5 057	1.8	9	620	0.2	81	5 677	0.8
1-50 000	144	2 353	0.8	21	489	0.1	165	2 842	0.4
Subtotal	530	280 655	98.9	96	403 047	100.0	626	683 703	99.6
Prospectors (2)	25	3 032	1.1	–	–	–	25	3 032	0.4
Total 2003	555	283 688	100.0	96	403 047	100.0	651	686 735	100.0
2004									
>10 million	6	80 773	13.5	16	420 603	72.8	22	501 376	42.6
5 million-10 million	22	155 683	26.0	10	80 607	13.9	32	236 292	20.1
1 million-5 million	111	243 179	40.5	22	61 691	10.7	133	304 870	25.9
500 000-1 million	88	63 673	10.6	12	8 782	1.5	100	72 456	6.2
200 000-500 000	110	36 254	6.0	13	4 154	0.7	123	40 408	3.4
100 000-200 000	74	10 403	1.7	9	1 188	0.2	83	11 591	1.0
50 000-100 000	59	4 225	0.7	9	617	0.1	68	4 842	0.4
1-50 000	119	2 129	0.4	21	424	0.1	140	2 553	0.2
Subtotal	589	596 319	99.4	112	578 067	100.0	701	1 174 386	99.7
Prospectors (2)	13	3 399	0.6	–	–	–	13	3 399	0.3
Total 2004	602	599 718	100.0	112	578 067	100.0	714	1 177 785	100.0
2005									
>10 million	13	238 275	29.7	15	338 015	67.1	28	576 290	44.2
5 million-10 million	18	124 974	15.6	15	93 467	18.6	33	218 441	16.7
1 million-5 million	148	311 358	38.9	22	60 955	12.1	170	372 314	28.5
500 000-1 million	99	71 285	8.9	10	7 095	1.4	109	78 381	6.0
200 000-500 000	111	36 125	4.5	7	2 495	0.5	118	38 621	2.9
100 000-200 000	70	9 973	1.2	6	722	0.1	76	10 696	0.8
50 000-100 000	59	4 075	0.5	5	369	0.1	64	4 444	0.3
1-50 000	124	2 399	0.3	20	384	0.1	144	2 783	0.2
Subtotal	642	798 466	99.6	100	503 503	100.0	742	1 301 969	99.8
Prospectors (2)	11	2 821	0.4	–	–	–	11	2 821	0.2
Total 2005	653	801 287	100.0	100	503 503	100.0	753	1 304 790	100.0
2006									
>10 million	14	326 681	29.1	16	435 439	72.6	30	762 119	44.3
5 million-10 million	43	279 551	24.9	13	92 724	15.5	56	372 275	21.6
1 million-5 million	193	402 680	35.9	23	56 354	9.4	216	459 035	26.7
500 000-1 million	108	67 572	6.0	15	10 257	1.7	123	77 829	4.5
200 000-500 000	100	30 751	2.7	10	3 252	0.5	110	34 003	2.0
100 000-200 000	60	7 634	0.7	10	1 248	0.2	70	8 882	0.5
50 000-100 000	43	2 560	0.2	4	290	...	47	2 850	0.2
1-50 000	71	1 289	0.1	13	213	...	84	1 502	0.1
Subtotal	632	1 118 716	99.6	104	599 777	100.0	736	1 718 494	99.8
Prospectors (2)	10	3 131	0.3	–	–	–	10	3 131	0.2
Total 2006 (rsi)	642	1 121 848	100.0	104	599 777	100.0	746	1 721 625	100.0

Source: Natural Resources Canada, from a federal-provincial/territorial survey of mining and exploration companies.
– Nil; ... Amount too small to be expressed; (rsi) Revised spending intentions.
(1) Includes on-mine-site plus off-mine-site activities. Includes field work, overhead, engineering, economic and pre- or production feasibility studies, environment and land access costs. (2) The number of prospectors is underestimated because it contains groups of prospectors.
Notes: Numbers may not add to totals due to rounding. Data up to and including 2005 are final; 2006 data are based on revised company spending intentions as compiled in September 2006.

Figure 2

Exploration and Deposit Appraisal Expenditures in Canada, by Type of Company and by Province and Territory, 2003-06 (Current Dollars)



Sources: Natural Resources Canada and Statistics Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.

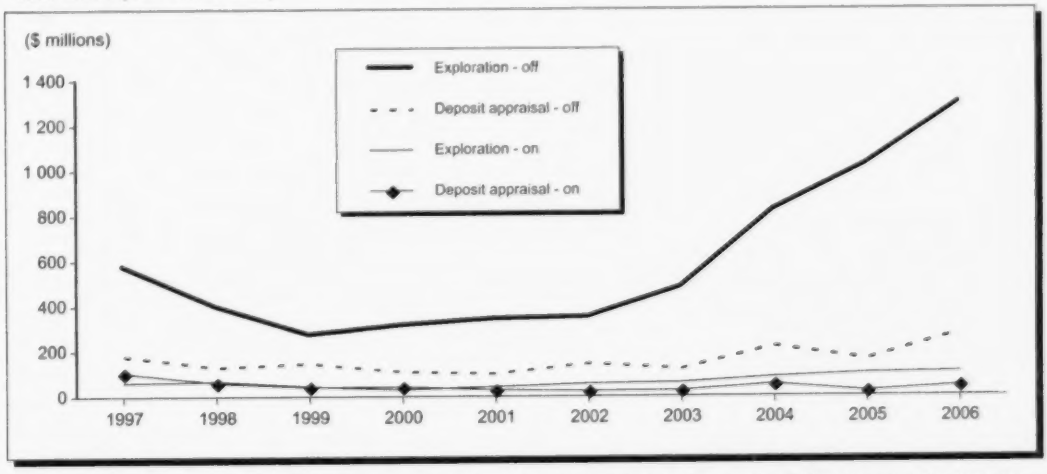
Notes: Exploration and deposit appraisal activities include only the search for and appraisal of new deposits; they do not include work for extensions of deposits already being mined or committed to production. Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site costs incurred for field work and overhead, plus engineering, economic and feasibility studies, environment and land access costs. Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

TABLE 2. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES IN CANADA, BY PROVINCE AND TERRITORY, 2003-06 (Current Dollars)

Province/Territory	2003		2004		2005		2006 (rsi)	
	($000)	(%)	($000)	(%)	($000)	(%)	($000)	(%)
Newfoundland and Labrador	23.1	3.4	33.2	2.8	48.7	3.7	78.9	4.6
Nova Scotia	6.4	0.9	9.1	0.8	6.5	0.5	11.7	0.7
New Brunswick	2.6	0.4	13.4	1.1	10.1	0.8	16.2	0.9
Québec	134.0	19.5	227.2	19.3	205.1	15.4	234.1	13.6
Ontario	219.4	32.0	306.9	26.1	294.0	22.5	344.8	20.0
Manitoba	27.2	4.0	36.0	3.1	52.9	4.0	52.0	3.0
Saskatchewan	47.7	7.0	71.8	6.1	133.9	10.1	207.1	12.0
Alberta	4.9	0.7	6.3	0.5	6.6	0.5	11.9	0.7
British Columbia	62.5	9.1	151.9	12.9	218.1	16.4	315.3	18.3
Yukon	12.7	1.9	22.0	1.9	54.0	4.1	80.0	4.7
Northwest Territories	53.6	7.8	112.4	9.5	96.3	7.3	175.6	10.2
Nunavut	92.7	13.5	187.5	15.9	178.7	13.5	194.0	11.3
Total	686.7	100	1 177.8	100	1 304.8	100	1 721.6	100
Exploration	538.1	78.4	903.5	76.7	1 119.9	84.3	1 396.6	81.1
Deposit appraisal	148.7	21.7	274.3	23.3	184.9	15.7	325.0	18.9

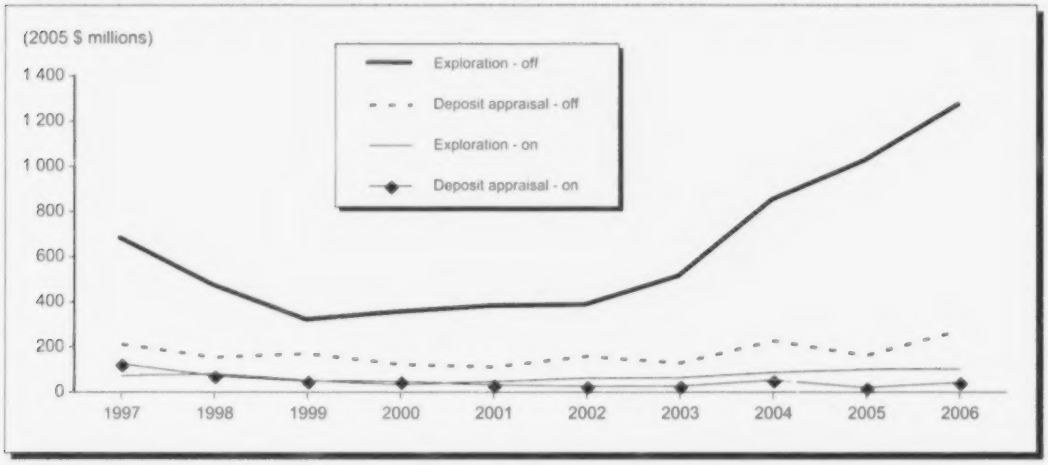
Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(rsi) Revised spending intentions.
Notes: Data up to and including 2005 are final; 2006 data are based on revised spending intentions as compiled in September 2006. Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site costs incurred for field work and overhead, plus engineering, economic and feasibility studies, environment and land access costs. Numbers may not add to totals due to rounding.

Figure 3a
On-Mine-Site and Off-Mine-Site Exploration and Deposit Appraisal Expenditures (1) **in Canada, 1997-2006** (Current Dollars)



Source: Natural Resources Canada, from the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) On-mine-site and off-mine-site exploration and deposit appraisal expenditures include field work and overhead costs, plus engineering, economic and feasibility studies, environment and land access costs.
Note: Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

Figure 3b
On-Mine-Site and Off-Mine-Site Exploration and Deposit Appraisal Expenditures (1) **in Canada, 1997-2006** (Constant Dollars)



Source: Natural Resources Canada, from the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) On-mine-site and off-mine-site exploration and deposit appraisal expenditures include field work and overhead costs, plus engineering, economic and feasibility studies, environment and land access costs.
Note: Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

format, when this type of expenditures amounted to $199 million in constant 2005 dollars (**Figure 3b**). However, one must remain careful when analyzing on-mine-site spending as the data are based on a smaller number of projects and tend to fluctuate more widely as projects are dropped or moved to a later stage of the mineral resource development cycle (sometimes in a relatively short time frame).

Despite being dwarfed by off-mine-site spending, which can lead to exciting new discoveries, on-mine-site exploration and deposit appraisal activity continues to have an important role in addressing the issue of declining ore reserve levels (**Table 3**) and improving the economic outlook of mining communities.[3]

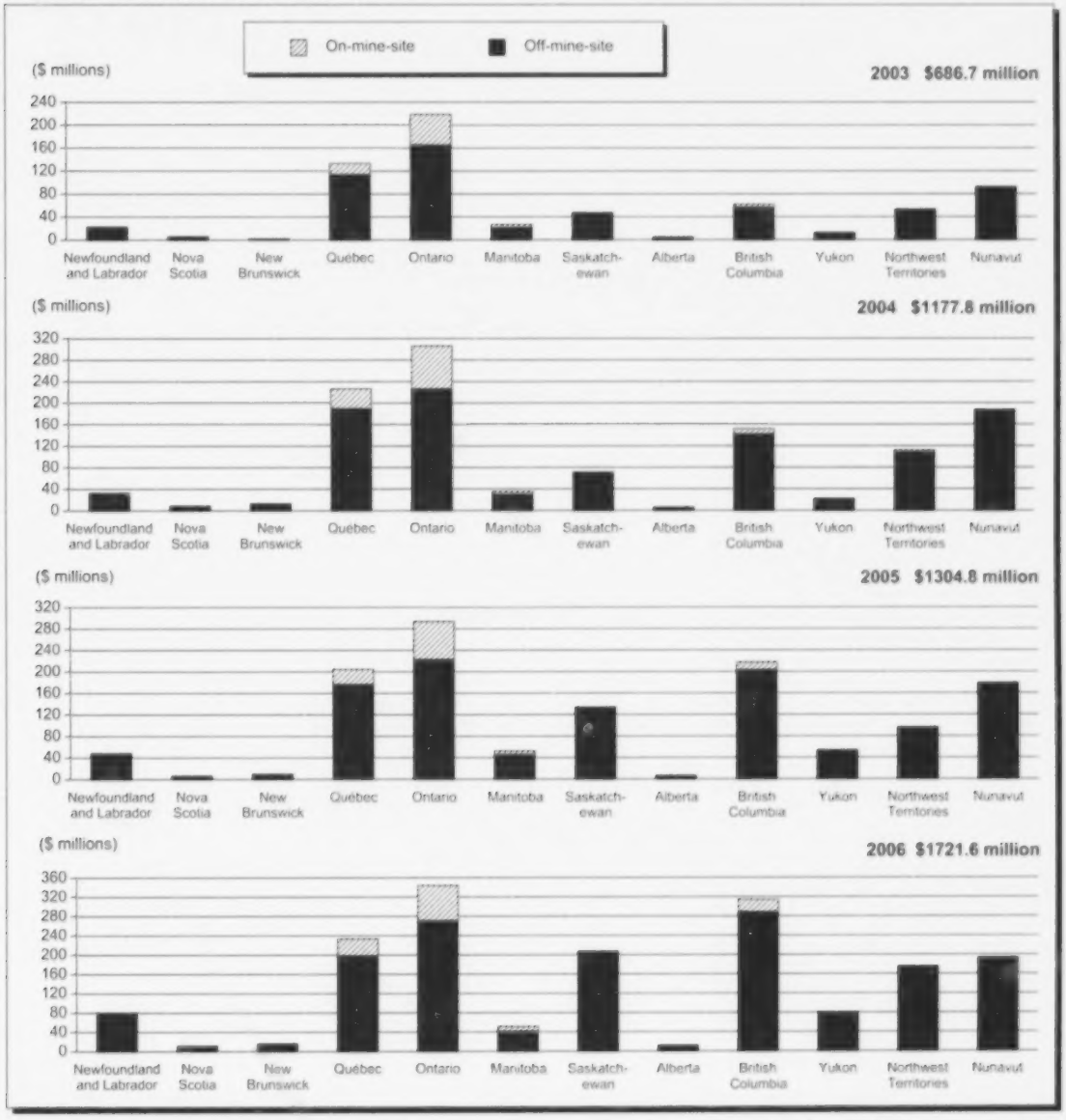
Ontario recorded the highest proportion of on-mine-site spending with 24% of its total exploration and deposit appraisal expenditures followed by Québec (14%), Manitoba (12%) and British Columbia (7%). In dollar terms, British Columbia has seen its record improve in the past few years to the point where $15 million was spent on-mine-site in that province in 2005. The latter, together with the two leaders, Ontario and Québec, as well as Manitoba, accounted for virtually all of the $121 million dedicated to on-mine-site exploration and deposit appraisal work in Canada in 2005.

1.3.1.2 Spending by Work Phase

A breakdown of spending by work phase (exploration and deposit appraisal) shows that expenditures dedicated to the exploration work phase continued to progress during 2005. This type of expenditure rose by another 24% to reach $1120 million (86% of total exploration and deposit

[3] For a discussion on the state of Canada's ore reserves, see Alan Reed, "Canadian Reserves of Selected Major Metals and Recent Production Decisions," in the 2005 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa.

Figure 4
On-Mine-Site and Off-Mine-Site Exploration and Deposit Appraisal Expenditures in Canada, by Province and Territory, 2003-06 (Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Notes: Exploration and deposit appraisal activities include only the search for and appraisal of new deposits; they do not include work for extensions of deposits already being mined or committed to production. Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site costs incurred for field work and overhead, plus engineering, economic and feasibility studies, environment and land access costs. Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

TABLE 3. CANADIAN RESERVES OF SELECTED MAJOR METALS AS AT DECEMBER 31 OF EACH YEAR, 1977-2005

Metal Contained in Proven and Probable Mineable Ore (1) in Operating Mines (2) and Deposits Committed to Production

Year	Copper	Nickel	Lead	Zinc	Molybdenum	Silver	Gold (3)
	(000 t)	(000 t)	(000 t)	(000 t)	(000 t)	(t)	(t)
1977	16 914	7 749	8 954	26 953	369	30 991	493
1978	16 184	7 843	8 930	26 721	464	30 995	505
1979	16 721	7 947	8 992	26 581	549	32 124	575
1980	16 714	8 348	9 637	27 742	551	33 804	826
1981	15 511	7 781	9 380	26 833	505	32 092	851
1982	16 889	7 546	9 139	26 216	469	31 204	833
1983	16 214	7 393	9 081	26 313	442	31 425	1 172
1984	15 530	7 191	9 160	26 000	361	30 757	1 208
1985	14 201	7 041	8 503	24 553	331	29 442	1 373
1986	12 916	6 780	7 599	22 936	312	25 914	1 507
1987	12 927	6 562	7 129	21 471	231	25 103	1 705
1988	12 465	6 286	6 811	20 710	208	26 122	1 801
1989	12 082	6 092	6 717	20 479	207	24 393	1 645
1990	11 281	5 776	5 643	17 847	198	20 102	1 542
1991	11 040	5 691	4 957	16 038	186	17 859	1 433
1992	10 755	5 605	4 328	14 584	163	15 974	1 345
1993	9 740	5 409	4 149	14 208	161	15 576	1 333
1994	9 533	5 334	3 861	14 514	148	19 146	1 513
1995	9 250	5 832	3 660	14 712	129	19 073	1 540
1996	9 667	5 623	3 450	13 660	144	18 911	1 724
1997	9 032	5 122	2 344	10 588	149	16 697	1 510
1998	8 402	5 683	1 845	10 159	121	15 738	1 415
1999	7 761	4 983	1 586	10 210	119	15 388	1 328
2000	7 419	4 782	1 315	8 676	97	13 919	1 142
2001	6 666	4 335	970	7 808	95	12 593	1 070
2002	6 774	4 920	872	6 871	82	11 230	1 023
2003	6 037	4 303	749	6 251	78	9 245	1 009
2004	5 546	3 646	667	5 299	80	7 198	801
2005	6 589	3 960	552	5 063	95	6 990	971

Source: Natural Resources Canada, based on company reports and the Federal-Provincial/Territorial Survey of Mines and Concentrators.
(1) No allowance is made for losses in milling, smelting and refining. Excludes material classified as "resources."
(2) Includes metal in mines where production has been suspended temporarily. (3) Excludes metal in placer deposits because reserves data are generally unavailable.

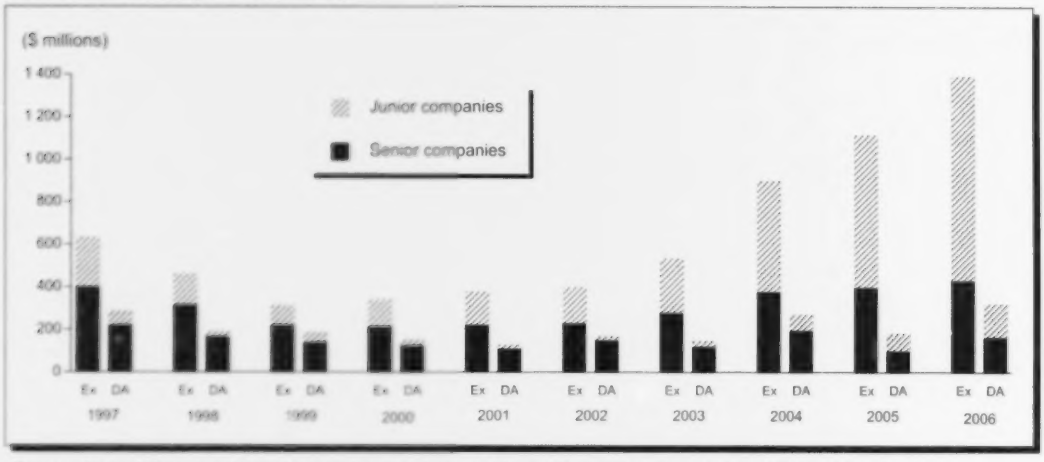
appraisal spending for the year). As for spending in the deposit appraisal phase, it continued to oscillate. This time, it decreased by 33% to $185 million after increasing by 84% to stand at $274 million in 2004 (**Figures 5a** and **5b**, **Table 4**). In this case, indications are that the decline in that type of spending is actually the result of a few large projects moving into the mine complex development stage.

The continuation of the upward trend in exploration expenditures that began slowly in 2000 reflects strong market fundamentals and could lead to new discoveries. However, this substantial exploration-phase spending is not all going to grassroots-type activities. A significant portion of the work in that phase occurs right before the deposit appraisal stage and involves delimitation work, often at already known deposits in established mining camps.

Off-mine-site spending of $1020 million represented 91% of total spending in the exploration work phase in 2005 (**Figure 3a**). Over the period 1997-2005, off-mine-site spending has consistently represented over 85% of total exploration-phase expenditures (**Figure 3b**). In terms of deposit appraisal expenditures, approximately 89% of the $185 million recorded for off- and on-mine-site deposit appraisal activities in 2005 was reported as off-mine-site spending. These proportions highlight a relative lack of effort to discover and delineate new deposits at operating mines.

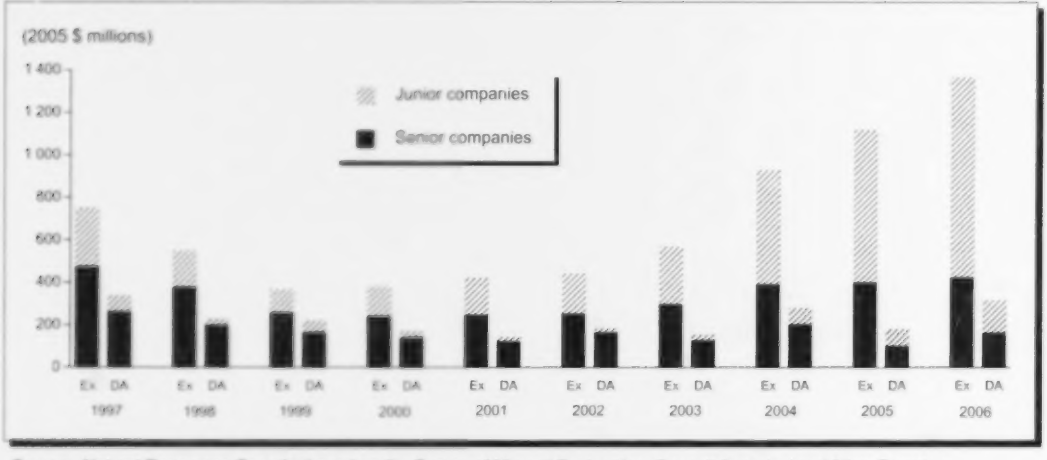
A provincial/territorial breakdown of exploration and deposit appraisal expenditures reveals that virtually all recorded spending in 2005 in Manitoba and Saskatchewan was reported as exploration-phase work (**Figure 6**). Nunavut (95%), Québec (88%), and Ontario and Newfoundland and Labrador (both with 85%) also recorded high proportions of exploration-related work. In fact, all Canadian mining jurisdictions experienced a domination of exploration-type work over deposit appraisal activities.

Figure 5a
Exploration and Deposit Appraisal Expenditures in Canada, by Type of Company and by Work Phase, 1997-2006 (Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Ex Exploration; DA Deposit appraisal.
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

Figure 5b
Exploration and Deposit Appraisal Expenditures in Canada, by Type of Company and by Work Phase, 1997-2006 (Constant Dollars)



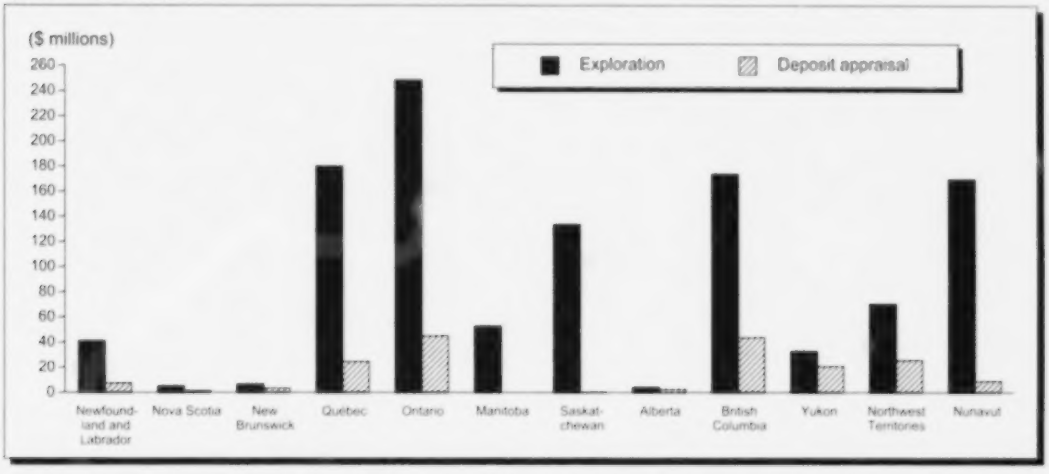
Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Ex Exploration; DA Deposit appraisal.
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data up to and including 2005 are final; 2006 data are revised company spending intentions as compiled in September 2006.

TABLE 4. EXPLORATION, DEPOSIT APPRAISAL AND MINE COMPLEX DEVELOPMENT EXPENDITURES IN CANADA, (1) 2004 AND 2005
(Current Dollars)

Expenditure Category	Exploration		Deposit Appraisal		Exploration Plus Deposit Appraisal		Mine Complex Development		Grand Total	
	2004	2005	2004	2005	2004	2005	2004	2005	2004	2005
	($000)									
Field work and overhead (2)	871 867	1 050 689	191 092	140 265	1 062 959	1 190 954	797 848	983 323	1 860 806	2 174 277
Engineering, economic and pre- or production feasibility studies	21 748	51 399	62 129	26 581	83 876	77 980	27 749	64 855	111 626	142 836
Environment	7 722	16 580	19 734	17 253	27 456	33 833	76 645	72 345	104 101	106 178
Land access	2 142	1 245	1 353	779	3 434	2 024	10 874	10 831	14 368	12 854
Subtotal	903 478	1 119 913	274 307	184 878	1 177 785	1 304 790	913 116	1 131 354	2 090 901	2 436 145
Off-mine-site (3)	819 047	1 019 840	222 212	164 097	1 041 259	1 183 937	n.a	n.a	1 041 259	1 183 937
On-mine-site (3)	84 431	100 073	52 095	20 780	136 526	120 853	913 116	1 131 354	1 049 642	1 252 207
Capital (4)	17 646	29 641	172 366	122 732	190 012	152 373	1 804 592	2 426 542	1 994 604	2 578 916
$ for environmental protection and restoration (5)	675	147	415	–	1 090	147	49 392	47 523	50 482	47 670
Total	921 123	1 149 554	446 673	307 609	1 367 797	1 457 164	2 717 708	3 605 419	4 085 504	5 015 060
Repair and maintenance (4)	8 014	3 438	50 953	37 231	58 967	40 669	1 641 234	1 412 364	1 700 202	1 453 033
$ for environmental protection and restoration (5)	593	2	348	7	941	9	28 029	55 523	28 970	55 532
Grand total	929 137	1 152 992	497 627	344 841	1 426 764	1 497 833	4 358 942	4 970 260	5 785 706	6 468 093
Total environment	8 990	16 729	20 497	17 260	29 487	33 988	154 067	175 391	183 553	209 379
Environment as a percentage of grand total	1.0	1.5	4.1	5.0	2.1	2.3	3.5	3.5	3.2	3.2

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
– Nil; n.a. Not applicable.
(1) Includes on-mine-site plus off-mine-site activities; exploration and deposit appraisal activities include only the search for and appraisal of deposits and do not include work for extensions of known reserves. (2) Overhead expenditures include mineral leases and claims, and project-related head office expenditures. (3) Amount of exploration and deposit appraisal expenditures dedicated to off-mine-site and on-mine-site activities. (4) Includes construction, and machinery and equipment expenditures. (5) As part of capital expenditures or repair and maintenance expenditures.
Notes: Numbers may not add to totals due to rounding. Data for 2004 and 2005 are final.

Figure 6
Exploration and Deposit Appraisal Expenditures in Canada, by Province and Territory, 2005
(Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data for 2005 are final.

In terms of ranking by total exploration expenditures, Ontario was far ahead of the other provinces/territories with $249 million, compared to Québec's $180 million, British Columbia's $174 million, Nunavut's $170 million, and Saskatchewan's $134 million. Together these five jurisdictions accounted for 81% of all exploration-phase expenditures in Canada in 2005.

On the deposit appraisal scene, the leaders, in dollar terms, were Ontario ($45 million), British Columbia ($44 million), the Northwest Territories ($26 million), Québec ($25 million), and a surprising Yukon ($21 million).

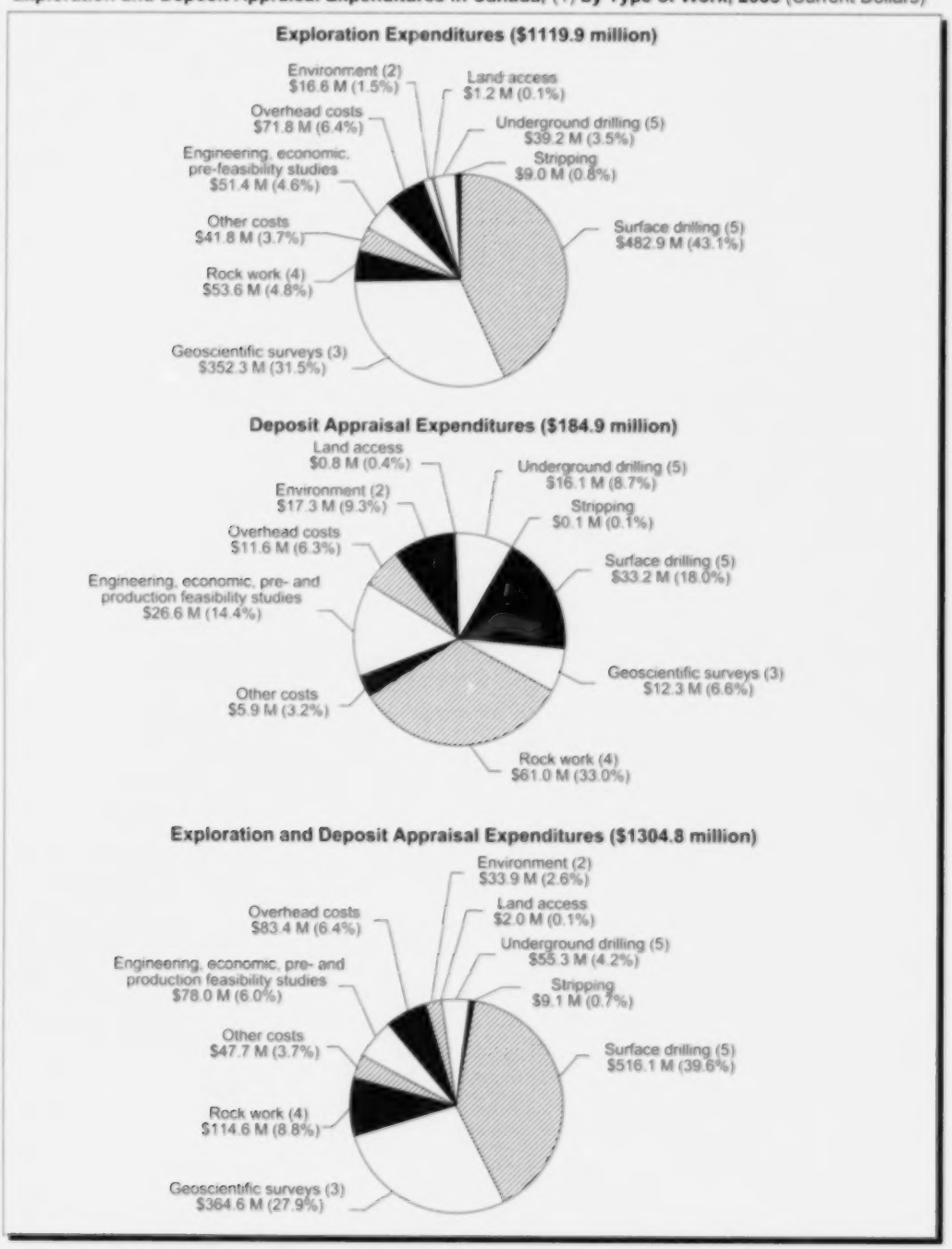
1.3.1.3 Spending by Type of Activity

A detailed cost breakdown for each of the exploration and deposit appraisal work phases continues to show that drilling (surface and underground) is the most important cost component in the discovery and delineation of a mineral deposit (**Figure 7**). In 2005, surface and underground drilling (diamond drilling and other types of drilling) accounted for 47% ($522 million) of the $1120 million spent on the exploration work phase. As can be expected, surface drilling represented the vast majority of exploration-related drilling activity. In fact, 92% of the $522 million spent on exploration-phase drilling was allotted to surface drilling projects. Evidently, geoscientific surveys (geology, geochemistry and geophysics) also represent a very important cost component in that work phase. In 2005, 32% ($352 million) of all exploration-phase spending was recorded under the geoscientific surveys cost category.

In the deposit appraisal phase, surface and underground drilling accounted for 27% ($49 million) of the total $185 million spent in 2005, second behind the rock work cost category (33%, $61 million) and ahead of the category encompassing engineering, economic and feasibility studies, which accounted for 14% ($27 million).

Overall, surface and underground drilling accounted for 44% ($571 million) of all exploration and deposit appraisal spending in 2005 while geoscientific surveys ranked second with 28% ($365 million).

Figure 7
Exploration and Deposit Appraisal Expenditures in Canada, (1) by Type of Work, 2005 (Current Dollars)


Exploration Expenditures ($1119.9 million)
Environment (2) $16.6 M (1.5%)
Land access $1.2 M (0.1%)
Overhead costs $71.8 M (6.4%)
Underground drilling (5) $39.2 M (3.5%)
Engineering, economic, pre-feasibility studies $51.4 M (4.6%)
Stripping $9.0 M (0.8%)
Other costs $41.8 M (3.7%)
Surface drilling (5) $482.9 M (43.1%)
Rock work (4) $53.6 M (4.8%)
Geoscientific surveys (3) $352.3 M (31.5%)
Deposit Appraisal Expenditures ($184.9 million)
Land access $0.8 M (0.4%)
Underground drilling (5) $16.1 M (8.7%)
Environment (2) $17.3 M (9.3%)
Stripping $0.1 M (0.1%)
Overhead costs $11.6 M (6.3%)
Surface drilling (5) $33.2 M (18.0%)
Engineering, economic, pre- and production feasibility studies $26.6 M (14.4%)
Geoscientific surveys (3) $12.3 M (6.6%)
Other costs $5.9 M (3.2%)
Rock work (4) $61.0 M (33.0%)
Exploration and Deposit Appraisal Expenditures ($1304.8 million)
Environment (2) $33.9 M (2.6%)
Overhead costs $83.4 M (6.4%)
Land access $2.0 M (0.1%)
Underground drilling (5) $55.3 M (4.2%)
Engineering, economic, pre- and production feasibility studies $78.0 M (6.0%)
Stripping $9.1 M (0.7%)
Other costs $47.7 M (3.7%)
Surface drilling (5) $516.1 M (39.6%)
Rock work (4) $114.6 M (8.8%)
Geoscientific surveys (3) $364.6 M (27.9%)

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.

(1) Includes on-mine-site and off-mine-site activities. (2) Environment includes characterization, permitting, protection, monitoring and restoration. (3) Geoscientific surveys include geology, geochemistry, ground geophysics and airborne geophysics. (4) Rock work activity includes shaft work, drifts, cross-cuts, raises, declines, rock sampling and dewatering costs. (5) Surface and underground drilling includes diamond and other types of drilling.

Notes: Numbers may not add to totals due to rounding. Data for 2005 are final.

Among the other cost categories included in the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures, those of environment and land access can be of particular interest. For instance, these statistics may be useful for non-governmental organizations interested in monitoring mineral resource development activity, for mining stakeholders in presenting their case for improvements to the tax treatment of their industry, for Aboriginal communities in planning the use of their lands, and for governments in developing mining-related policies.

In 2005, a total of $34 million was reported by survey respondents as environment-related expenditures, which include costs incurred for characterization, permitting, protection, monitoring, and restoration. This total represents 2.6% of all exploration and deposit appraisal expenditures reported for that year. These environment-related expenditures were split almost evenly between the exploration and deposit appraisal work phases, although such costs usually become more important as projects advance towards production. For instance, environment-related costs (including capital, repair and maintenance) in the mine complex development category amounted to $175 million in 2005 (**Table 4**).

Similar to environmental costs, land access costs (which include costs incurred for impact and benefit and socio-economic agreements, rights of way, damages, and permits, but do not include acquisition costs) only account for a small fraction of total exploration and deposit appraisal expenditures. In 2005, these costs represented only 0.1% ($2 million) of total exploration and deposit appraisal expenditures. However, land access costs also increase substantially at the mine complex development stage and beyond as items such as impact and benefit agreements come into play.

Industry representations in recent years to obtain a more favourable tax treatment for community consultation (land access) and environmental costs indicate that these two cost categories may, in fact, be more substantial than what companies themselves have reported in the survey. This issue is currently being studied by a sub-working group on taxation of the Intergovernmental Working Group on the Mineral Industry (IGWG) on behalf of Canada's mines ministers. For the purpose of this publication, the reader should know that both environmental and land access costs may be underestimated.

1.3.1.4 Spending by Type of Company

The analyses within this report often distinguish between senior and junior companies. In general terms, a senior company derives its income from mining or other business ventures and can direct part of that income towards its exploration and deposit appraisal projects. Junior companies, on the other hand, usually have no regular source of income and must finance their projects through the issuance of shares.

In 2005, 100 senior project operators accounted for 39% ($504 million) of all exploration and deposit appraisal expenditures in Canada (**Figures 1** and **2**). About 80% of total senior spending was allocated to exploration activities with the remaining fifth going to deposit appraisal work (**Figure 5a**). The distribution of senior project operators by range of spending was once again skewed towards the higher spending intervals in 2005 with 52 project operators recording expenditures above the $1 million level and 15 of these falling in the more-than-$10 million category (**Table 1**). In fact, these 15 projects operators averaged spending of $22.5 million.

About 75% ($375 million) of the expenditures reported by senior firms in 2005 were incurred in Ontario, Québec, Saskatchewan and British Columbia (in decreasing order) (**Figure 2**). Compared to 2004, year-over-year dollar increases were of a much smaller magnitude, with the largest occuring in British Columbia (+$17 million) and Saskatchewan (+$10 million). Declines in senior spending, on the other hand, were important in the Northwest Territories (-$39 million), Nunavut (-$33 million) and Québec (-$32 million).

The number of junior project operators jumped to 642 in 2005 from 589 in 2004, an increase of 9% and a continuation of the increasing trend that began in 2001 (**Figure 1** and **Table 1**). Altogether, these junior companies (along with prospectors) spent $801 million on exploration and deposit appraisal in 2005, a strong 34% increase over the $600 million they spent in 2004. This very significant improvement in junior company spending comes on the heels of other major gains in the period 1999-2004, especially in the latter years. Even when accounting for the time value of money, 2005 junior company exploration and deposit appraisal expenditures are almost five times their value of 1999 (**Figure 5b**). This strong growth in junior spending coincides with vastly improved metal market conditions and the availability of federal and provincial/territorial incentives aimed precisely at encouraging the type of exploration that junior companies specialize in, that is, surface grassroots and delimitation work.

Most mining provinces/territories experienced an increase in junior company spending in 2005. In dollar terms, junior spending increased the most in Saskatchewan (+$52 million), British Columbia (+$49 million) and the Yukon (+$32 million). British Columbia ($165 million) and Nunavut ($133 million) relegated Ontario ($131 million) to third place in terms of the largest amount of junior spending in 2005. Québec came in fourth with a total of $100 million (**Figure 2**). Together these four jurisdictions accounted for two-thirds of all junior spending in Canada in 2005.

In 2005, junior company spending most frequently fell in the $1 million-$5 million and the $200 000-$500 000 spending intervals (**Table 1**). Companies spending less than $50 000 are not considered here as their average spending of less than $20 000 does not translate into many significant exploration projects. There were substantial increases in the number of junior companies falling into the spending intervals situated above the $500 000 mark, most particularly in the $1 million-$5 million and more-than-$10 million intervals. With an average investment of $1.24 million in 2005, the group of 642 junior companies (excluding prospectors) that managed mineral exploration projects in Canada became the most important entity on the Canadian exploration and deposit appraisal scene.

1.3.1.5 Spending by Type of Commodity Sought

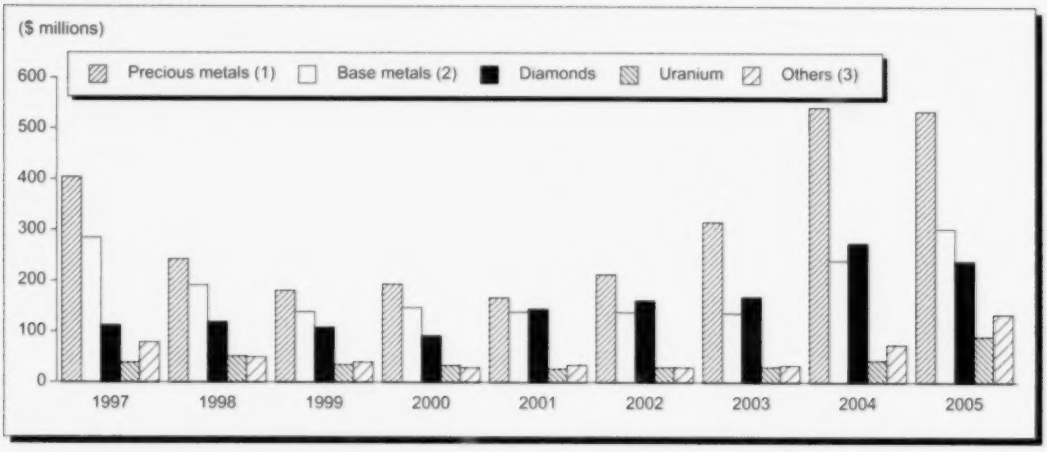
The federal-provincial/territorial survey provides a breakdown of exploration and deposit appraisal spending statistics by type of commodity sought. **Figure 8a** shows such a breakdown for the groups of commodities or individual commodities most explored for in Canada: precious metals, base metals, diamonds, uranium, and "others."

As a result of declining prices, exploration and deposit appraisal spending for precious metals (mostly gold) decreased significantly between 1997 and 2001. In constant 2005 dollars, precious-metals spending dropped from $479 million in 1997 to $185 million in 2001 (**Figure 8b**). For base metals, the downward trend was of an even longer duration. Starting with a 1997 total of $338 million (constant 2005 dollars), base-metal spending spiralled down to $146 million in 2003.

In 2002, precious-metals expenditures recovered somewhat by increasing to $234 million (constant 2005 dollars). In the following two years, in the presence of an improving gold price outlook, precious-metals spending increased drastically to reach $336 million in 2003 and a high of $560 million in 2004 (both in constant 2005 dollars). Precious-metals spending regressed somewhat in 2005 (to $534 million), but not as a result of a dimmer gold outlook. On the contrary, gold continued to shine but, by that time, the markets for a number of other commodities also showed great promise and caught the interest of Canadian explorationists (**Table 5**).

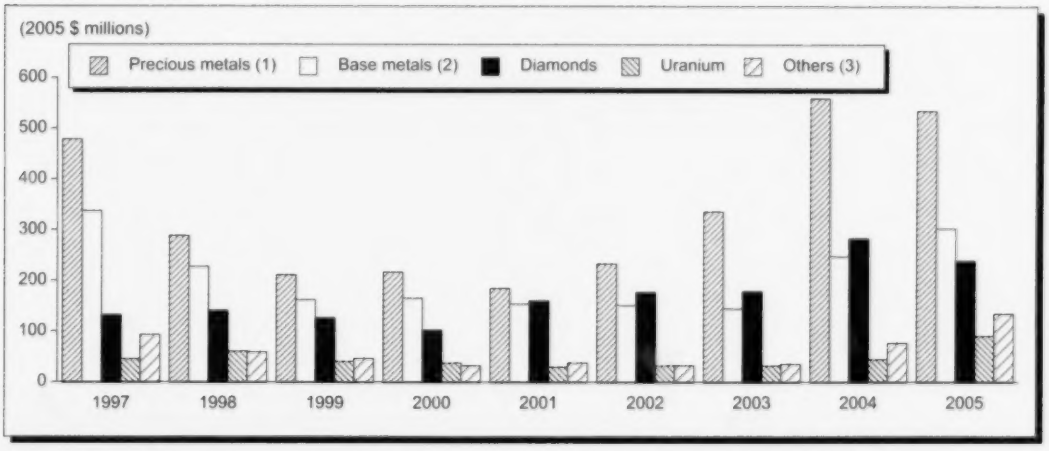
For base metals, a revamped exploration effort led to expenditures of $249 million in 2004 and $304 million in 2005, placing them ahead of diamonds in terms of the most-sought-after commodity group after precious metals. A continued positive outlook remains a necessity if the current state of declining Canadian base-metal reserves is to be reversed (**Table 3**).

Figure 8a
Exploration and Deposit Appraisal Expenditures in Canada, by Commodity Sought, 1997-2005
(Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Includes gold, silver and platinum group metals. (2) Includes copper, nickel, lead and zinc. (3) Includes ferrous metals, other metals, nonmetals (including coal), and "not specified."
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data for 2005 are final.

Figure 8b
Exploration and Deposit Appraisal Expenditures in Canada, by Commodity Sought, 1997-2005
(Constant Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Includes gold, silver and platinum group metals. (2) Includes copper, nickel, lead and zinc. (3) Includes ferrous metals, other metals, nonmetals (including coal), and "not specified."
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data for 2005 are final.

TABLE 5. PRICES OF SELECTED COMMODITIES, 2004-06

	U.S. Currency	2004	2005	% Change	2005 (see note below)	2006 (see note below)	% Change
		Annual Average					
Copper	¢/lb	130.00	166.87	28.37	160.12	303.73	89.69
Nickel	$/lb	6.27	6.69	6.61	6.87	10.18	48.25
Zinc	¢/lb	47.53	62.68	31.88	59.64	138.42	132.09
Lead	¢/lb	40.21	44.29	10.15	43.35	55.01	26.90
Molybdenum	$/lb	16.41	31.73	93.33	32.37	24.66	-23.82
Gold	$/troy oz	409.21	444.88	8.72	435.18	599.44	37.75
Silver	$/troy oz	6.65	7.31	9.94	7.12	11.26	58.10
Platinum	$/troy oz	845.14	896.43	6.07	882.02	1 139.55	29.20
Palladium	$/troy oz	230.62	201.21	-12.75	190.85	319.45	67.38
Uranium (U_3O_8)	$/lb (10 mo. avg.)	20.35	30.66	50.66	29.70	46.78	57.51
Coal	$/t f.o.b.	58.00	126.90	118.79	126.90	114.00	-10.17
Iron ore	¢/Fe unit	61.88	115.51	86.67	115.51	112.04	-3.00

Sources: *Platts Metals Week*; Cameco Corporation; AME Mineral Economics.
Note: Comparisons for 2005/2006 are based on 10-month averages, except coal and iron ore, which are full year 2005 compared with AME Mineral Economics' estimate for 2006.

Base metals - LME settlement
Molybdenum - MW mean
Precious metals - London final or PM fix
Uranium - U.S. spot price - average of 12 months
Coal - Premium hard coking Japanese market
Iron ore - European CVRD benchmark - pellets

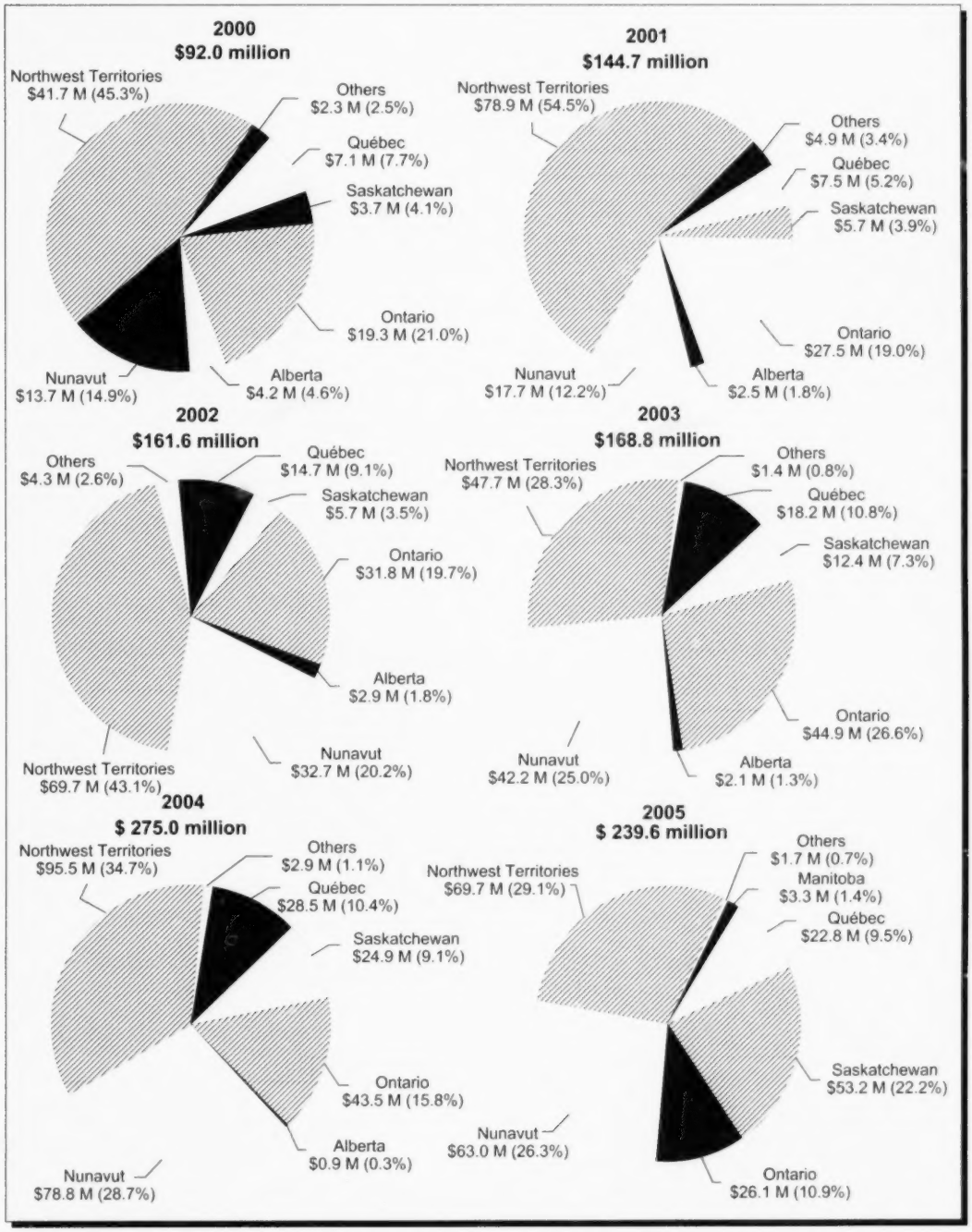
With an established and growing diamond mining industry, and with diamond exploration projects right across the country, this commodity remains one of the most attractive in Canada as demonstrated by exploration and deposit appraisal spending totaling $240 million in 2005 (**Figure 9**).

Uranium, with 2005 spending of $91 million, is also fast becoming a star on the Canadian exploration stage. Energy security concerns will most likely mean continued strong interest in this commodity, which is being explored for in a number of Canadian jurisdictions. In the "other" category, strong showings by the ferrous metals and coal have also pushed that type of spending to a 2005 peak of $135 million.

Table 6 combines information on both the types of companies conducting exploration and deposit appraisal activities and the types of commodities sought by these companies. In 2005, despite a drop of $58 million, precious metals continued to be the favourite target of senior companies with total spending of $177 million. Base metals were second with expenditures of $133 million, an increase of $21 million over the previous year. During 2005, senior companies also considerably reduced their exploration and deposit appraisal spending for diamonds. This was not negative news, however, as the $76 million reduction in diamond-related spending can be explained by their investments being aimed at activities closer to the production stage, beyond the exploration and deposit appraisal stages studied in this report.

As for junior companies, they continued to show a marked preference for precious-metals exploration and deposit appraisal. Their steadily increasing expenditures on the search for gold and platinum group metals (PGM) reached $359 million in 2005, almost 2.5 times the amount recorded in 2003. Junior companies also significantly increased their spending on the other commodity groups. For example, junior companies increased their expenditures on the search for base metals from $129 million in 2004 to $170 million in 2005, on the search for uranium by over 400% to $54 million, and on the search for diamonds to $148 million from $107 million. As a result, Canadian junior mining companies outspent senior companies in every mineral commodity group in 2005.

Figure 9
Diamond Exploration and Deposit Appraisal Expenditures in Canada, by Province and Territory, 2000-2005 (Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.

Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Numbers may not add to totals due to rounding. Data for 2005 are final.

TABLE 6. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES IN CANADA, (1) BY TYPE OF COMPANY AND MINERAL COMMODITY, 2003-05 (Current Dollars)

Type of Company	Base Metals	Precious Metals	Uranium	Diamonds	Others (2)	Total
			($000)			
2003						
Junior companies and prospectors	55 796	144 269	2 391	62 558	18 674	283 688
Senior companies	81 204	172 144	28 389	106 256	15 054	403 047
Total	136 999	316 413	30 781	168 815	33 727	686 735
2004						
Junior companies and prospectors	128 942	308 205	10 727	107 082	44 762	599 718
Senior companies	112 333	234 734	33 104	167 887	30 009	578 067
Total	241 275	542 940	43 831	274 969	74 771	1 177 785
2005						
Junior companies and prospectors	170 356	358 715	54 005	147 874	70 337	801 287
Senior companies	133 143	176 921	37 196	91 714	64 530	503 504
Total	303 499	535 635	91 201	239 587	134 868	1 304 790

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site costs incurred for field work and overhead, plus engineering, economic and feasibility studies, environment and land access costs. (2) Includes iron, other metals, coal and other nonmetals.
Notes: Numbers may not add to totals due to rounding. Data for 2005 are final.

1.3.2 2006 Exploration and Deposit Appraisal Expenditures

1.3.2.1 Statistical Summary

As explained in the opening paragraphs of this chapter, company spending intentions for 2006 were compiled in January 2006 and revised in September of the same year. While this approach yields more timely forecasts of exploration and deposit appraisal expenditures, it also results in a less-detailed forecast survey exercise. For instance, data on spending by type of commodity and by type of work are not exhaustive enough in the 2006 revised forecast results to be presented in this report. Rather, they will be available in the 2007 edition after results from the final survey have been released later in 2007.

Company spending intentions, compiled in January 2006 and revised in September 2006, reveal that 736 companies (project operators) intended to spend even more, as a group, than they did in 2005 with revised spending intentions of $1718 million (**Figures 1** and **2**, **Table 1**). When including prospectors and groups of prospectors, this total reaches $1722 million. While the final amount of exploration and deposit appraisal spending will be confirmed in the *Actual* survey, it can already be said that 2006 has been another exceptional year for mineral exploration investment in Canada. Still, it will be interesting to see how close this forecast really is to the actual 2006 spending total. In this type of forecasting exercise, there is a tendency, when getting close to a peak or a trough, to overestimate or underestimate, respectively. While metal prices continue to be strongly supportive, one factor that could lead to the 2006 forecast not being met is the ability of companies to actually raise and spend all of their intended budgets. It will also be interesting to see what concrete results, in terms of quality discoveries and projects advancing towards the production stage, will emerge from this outstanding exploration effort and how this will benefit the future outlook of the Canadian mining industry.

The total of 736 project operators is comparable to the 2005 total of 742 companies (expenditures of $1305 million, when including prospectors). On average, companies were planning to spend $2.3 million per project in 2006, an amount that was more than twice the level of 2003 ($1.1 million). Part of this increasing-investment-per-project trend can probably be explained by higher exploration costs resulting from the intensifying use of equipment and resources. However, it has

also taken place in an environment conditioned by strong metal prices, interesting exploration results, generous incentive levels, and mining-friendly capital markets. The timing and combination of these favourable conditions have provided a strong impetus for companies to invest in and bring their projects as far along the mineral development spectrum as possible.

This commitment to serious exploration and deposit appraisal activity is highlighted by the number of high-spending project operators. Revised company spending intentions indicate that a total of 302 companies (231 in 2005, 187 in 2004, and 115 in 2003) each intended to spend more than $1 million in 2006 (**Table 1**). These 302 companies expected to spend a total of $1593 million, or 93% of total intended expenditures for 2006. This $1593 million total also represents a 37% increase from the $1167 million spent on projects of $1 million or more in 2005.

Very large spending intentions (more than $10 million) used to be the appanage of senior companies. In 2006, this spending category will be almost evenly divided between the two types of companies. Of the 30 project operators with intended spending exceeding $10 million, 14 are junior companies and 16 are senior companies. The 14 junior company project operators are expected to average $23.3 million in expenditures and the 16 senior ones are expected to average $27.2 million. Junior companies totally dominated the other spending categories, even the $5 million-$10 million and $1 million-$5 million ones. In these two spending intervals, there were 236 junior company project operators in 2006. Future Canadian mines might well originate from the intense exploration and deposit appraisal activity reported by this pool of junior company project operators.

Overall, the 2006 forecast total of $1722 million is reassuring. While prices remain strong across a wide range of mineral commodities, there are concerns about companies being able to meet their spending plans and about the increasing cost of exploration and deposit appraisal activities. The challenge for Canadian mineral exploration companies, if they are to maintain that pace, will be to show concrete results to their investors in terms of promising discoveries and projects moving beyond the exploration and deposit appraisal stages.

Some Canadian jurisdictions reported very high levels of intended exploration and deposit appraisal expenditures for 2006. It was the case for Ontario ($345 million), British Columbia ($315 million), Québec ($234 million), and Saskatchewan ($207 million), which collectively accounted for about 64% of the total intended spending for 2006 (**Figure 2** and **Table 2**). Nunavut ($194 million) and the Northwest Territories ($176 million) accounted for another 21% as spending continued to increase everywhere except in Manitoba, where it stabilized at $52 million. British Columbia (+$97 million, +45%), the Northwest Territories (+$79 million, +82%) and Saskatchewan (+$73 million, +55%) stood out as provinces/territories with both large monetary and proportional increases in spending for 2006.

In Ontario and Québec, these high levels of spending are distributed among many projects targeting a number of commodities (precious metals, base metals, diamonds, and uranium) and are also well balanced between junior and senior companies. In British Columbia, where spending is also well distributed among projects and commodities, including coal and porphyry deposits (copper and molydenum), the junior mining sector is definitely predominant. Of course, Saskatchewan is at the forefront of the intensifying search for uranium that is sweeping the country, but diamonds are also a factor there. In Nunavut, diamonds, gold, base metals, and uranium, as well as other products such as iron ore, are attracting explorationists. Uranium has even been a factor in the exploration revival that is taking place in the Yukon (where other non-traditional commodities such as tungsten and molybdenum have joined the more traditional gold, silver, zinc and copper) and in Newfoundland and Labrador (along with base metals and gold).

Revised company spending intentions indicate that off-mine-site exploration and deposit appraisal expenditures are expected to continue on the upward trend that began after the trough of 2000 (when using constant 2005 dollars). In 2006, off-mine-site exploration and deposit appraisal spending is expected to increase by another 33% from the 2005 level of $1184 million and reach $1573 million

(**Figures 3a** and **3b**). British Columbia (+$86 million), the Northwest Territories (+$79 million) and Saskatchewan (+$73 million) will experience the most significant increases for that type of spending (**Figure 4**).

Overall, off-mine-site spending is expected to account for 91% of total exploration and deposit appraisal expenditures in Canada in 2006. This proportion further reinforces previous concerns about the depletion of Canada's ore reserves, particularly at base-metal mines, as on-mine-site expenditures to discover new deposits on the properties of operating mines continue to lag behind those taking place away from mine sites.

Ontario ($73 million), Québec ($35 million) and British Columbia ($26 million) are expected to account for 90% of the $149 million that is slated to be spent for exploration and deposit appraisal work on mine sites in 2006. It will be particularly interesting to see how the intense merger and acquisition activity that took place in 2006 in the Canadian mining industry will affect 2007 on-mine-site spending intentions as the new owners reveal their plans for their newly acquired Canadian mines.

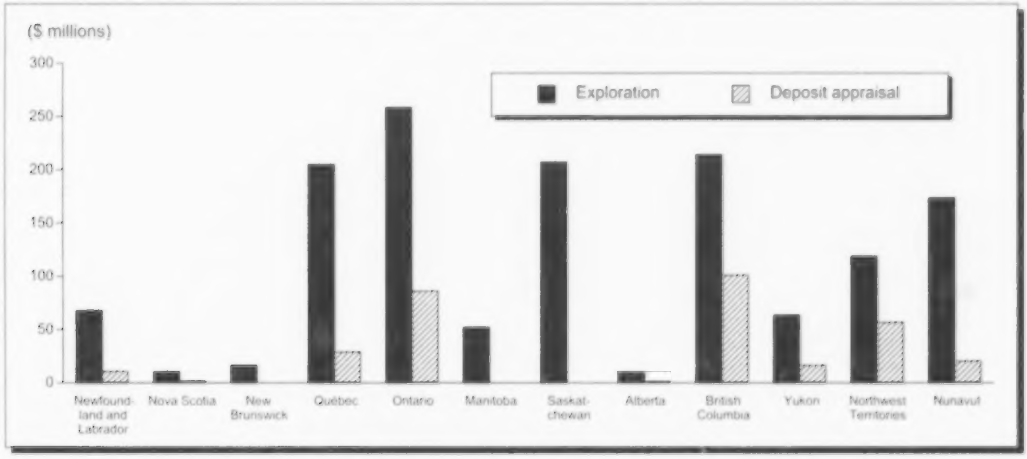
1.3.2.2 Spending by Work Phase

Revised company spending intentions indicate that expenditures dedicated solely to exploration activities will increase by 25% in 2006 to reach $1397 million (**Figures 5a** and **5b**). This amount represents 81% of total intended exploration and deposit appraisal expenditures for that year. Of this $1397 million total, $1291 million (92%) will be incurred off mine sites (**Figures 3a** and **3b**).

As for deposit appraisal spending, it is expected to amount to $325 million in 2006. Of this total, $281 million (87%) will be incurred off mine sites and $44 million (13%) on mine sites.

On a provincial/territorial basis, exploration-phase expenditures are expected to surpass deposit appraisal expenditures in every mining province/territory (**Figure 10**). New Brunswick, Manitoba and Saskatchewan are expected to have virtually all of their work recorded under the exploration

Figure 10
Exploration and Deposit Appraisal Expenditures in Canada, by Province and Territory, 2006
(Current Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
Notes: Exploration and deposit appraisal expenditures include off-mine-site and on-mine-site field and overhead expenditures, plus engineering, economic and feasibility studies, environment and land access costs. Data for 2006 are based on revised company intentions compiled in September 2006.

category. The proportion of exploration work, out of total exploration and deposit appraisal spending, in other provinces/territories is also expected to be at least 80% in Newfoundland and Labrador, Nova Scotia, Québec, Alberta, and Nunavut.

In terms of ranking by total exploration-phase expenditures, Ontario is once again expected to rank first with spending of $258 million. British Columbia ($214 million), Saskatchewan ($207 million), Québec ($205 million), Nunavut ($173 million) and the Northwest Territories ($119 million) will also be the recipients of major exploration-phase investments.

British Columbia ($101 million), Ontario ($86 million) and the Northwest Territories ($57 million) should all register strong increases in deposit appraisal spending in 2006 and lead the country for that type of spending. These three jurisdictions are expected to show a better-balanced ratio of exploration to deposit appraisal expenditures than the other provinces/territories.

1.3.2.3 Spending by Type of Company

Based on company spending intentions compiled in January 2006 and revised in September 2006, a total of 104 senior project operators intended to spend $600 million in 2006, accounting for 35% of all exploration and deposit appraisal expenditures for that year (**Figures 1** and **2**). In a year when overall spending is expected to increase by 32%, from $1305 million in 2005 to $1722 million, senior spending should also rise, but by a lesser 19%. For the third year in a row, junior exploration spending will exceed that of senior companies, a feat that only happened once before, in 1987, when the generous Mining Exploration Depletion Allowance combined with favourable metal prices to push junior exploration spending to record highs. About 72% of total spending by senior companies in 2006 is expected to be allocated to activities falling in the exploration work phase (**Figures 5a** and **5b**).

Almost three-quarters (74%) of the intended expenditures by senior firms for 2006 were destined for Ontario, Québec, Saskatchewan and British Columbia (in decreasing order) (**Figure 2**). Saskatchewan (+$38 million), Ontario (+$31 million) and the Northwest Territories (+$28 million) are expected to account for most of the 19% overall increase in senior company spending in 2006.

Excluding prospectors, the number of junior project operators was expected to total 632 in 2006, compared to 642 in 2005. The number of junior project operators could have peaked after a period of growth that saw this number increase from 387 in 2000 (**Figure 1**). This relatively stable number of junior project operators is expected to increase its spending by $320 million (+40%) in 2006 (**Figures 5a** and **5b**). This impressive increase comes on the heels of six successive years of growth and maintains the momentum created by gains (in 2005 constant dollars) of 44% in 2003, 105% in 2004 and 30% in 2005. Riding this upward trend, total intended junior company spending (including prospectors) is expected to reach $1122 million in 2006. Notwithstanding differences in surveying methodologies over the years, this total is the highest ever recorded for junior company spending (in both current and constant 2005 dollars).

As can be expected, an increase of this magnitude will be felt throughout most of the country (**Figure 2**). The largest increases, in dollar terms, should occur in British Columbia (+$88 million), the Northwest Territories (+$51 million), Québec (+$40 million), and Saskatchewan (+$36 million). In decreasing order of expenditures, British Columbia, with an outstanding total of $253 million, Ontario ($150 million), Nunavut ($149 million), and Québec ($140 million), as a group, are expected to account for 62% of all junior company expenditures in Canada in 2006. The Northwest Territories ($117 million) and Saskatchewan ($115 million) should also boast strong levels of junior company expenditures while the Yukon ($79 million) and Newfoundland and Labrador ($67 million) will both benefit from vastly improved commitments by the junior mining sector.

When not counting projects under the $50 000 level, junior company project operators typically spent $100 000 to $500 000 at the onset of the rising trend in 2000, 2001 and 2002 (**Table 1**). Over

the years, junior company project operators with higher spending ($500 000 or more) became more prevalent as this sector picked up momentum. This tendency continued all the way to the spending intentions survey of 2006 and translates into numerous junior company project operators intending to spend more than $1 million. In fact, for 2006, junior company project operators are expected to number 193 in the $1 million-$5 million interval, 43 in the $5 million-$10 million interval, and 14 in the more-than-$10 million category. Overall, the 632 junior company project operators will average $1.8 million in spending for a total injection of $1.1 billion in the Canadian mineral exploration sector in 2006.

Junior company expenditures are poised to exceed those by senior companies for the third year in a row. These companies have been able to rapidly mobilize their resources in the presence of a positive metals market outlook, favourable financing conditions, and the availability of government-provided measures to encourage grassroots-type (or off-mine-site) exploration. In this positive environment, junior companies have also been able to benefit from associations with senior companies to provide funds, knowledge and expertise in the joint exploration of promising properties.

The contribution of government incentives to the current rejuvenation of the Canadian junior mining sector clearly coincides with the rising trend in junior company spending. Incentives like the federal Investment Tax Credit for Exploration (ITCE), which was introduced in October 2000 and is linked to the use of flow-through shares, as well as a number of harmonized and non-harmonized provincial/territorial measures, were specifically designed to meet the needs of the junior mining sector and to encourage grassroots-type exploration work (see the Regional Outlook section for more details on provincial/territorial incentive measures).

In fact, evidence gathered by an Intergovernmental Working Group on the Mineral Industry (IGWG) sub-working group on taxation, and submitted to the last four Mines Ministers' Conferences,[4,5,6,7] strongly suggests that most of the junior company spending recorded in Canada since 2000 has indeed been financed through the issuance of flow-through shares. Data collected by Natural Resources Canada for the period ranging from October 2000 (date of introduction of the ITCE) to December 2005 reveal that flow-through-share funds totaling more than $1673 million had been raised from 2113 separate flow-though-share issues to finance mineral exploration projects in Canada. Furthermore, this total does not even include data for 2006.

Introduced as a temporary measure to counter one of the most drastic declines in the history of Canadian mineral exploration, the ITCE was extended twice in the federal budgets of 2003 and 2004. It was terminated at the end of 2005, although issuing corporations still had until the end of 2006 to incur exploration expenses with funds that were raised before the end of the program.

In its first budget, the newly elected government then reintroduced the ITCE for 11 months, effective May 2, 2006, until March 31, 2007. At the time of writing this report, there was no news about the future of this tax measure beyond its planned expiry date.

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[4] Intergovernmental Working Group on the Mineral Industry, *Taxation Issues Relating to Exploration and the Restructuring of Resource Taxation*, Canadian Mines Ministers' Conference, Halifax, Nova Scotia, September 2003.

[5] Intergovernmental Working Group on the Mineral Industry, *Taxation Issues for the Mining Industry - 2004 Update*, Canadian Mines Ministers' Conference, Iqaluit, Nunavut, July 2004.

[6] Intergovernmental Working Group on the Mineral Industry, *Taxation Issues for the Mining Industry - 2005 Update*, Canadian Mines Ministers' Conference, St. Andrews, New Brunswick, September 2005.

[7] Intergovernmental Working Group on the Mineral Industry, *Taxation Issues for the Mining Industry - 2006 Update*, Canadian Mines Ministers' Conference, Whitehorse, Yukon, August 2006.

1.3.2.4 *Spending by Type of Commodity Sought*

Because complete statistics on commodities sought are collected in the *Actual* part of the survey rather than the *Spending Intentions* component, no firm data on this type of spending are available yet for 2006. As a result, a spending-by-commodity-sought analysis for 2006 will not be presented in this report. Nevertheless, with most metal markets continuing to be favourable at the time of writing this report, all of the commodity groups should continue to perform well in 2006 and 2007.

1.4 DRILLING

Drilling activities are an essential component of the mineral development cycle from the anomaly investigation stage to the deposit delineation and deposit definition stages. As such, drilling statistics constitute a valuable indicator of recent levels of Canadian mineral exploration and deposit appraisal activity.

Diamond drilling is the most widely used drilling method for determining the existence, location, extent, grade, and tonnage of a mineral deposit. This type of drilling figures in most of the following analysis although, in some cases, other types of drilling are also considered. The data are from the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures and include all metres (m) drilled and expenditures reported by companies for their "own account" (drilling they did themselves) and for contracted drilling work. Data for 2006 will only be available once the *Preliminary* survey results are released in March 2007.

1.4.1 Drilling by Work Phase

According to the federal-provincial/territorial survey, a total of 3 890 000 m of surface and underground drilling (including diamond drilling and other drilling methods) was carried out for exploration and deposit appraisal purposes in Canada in 2005, compared to 3 557 000 m in 2004 (**Tables 7** and **8**). Of this total, 3 731 000 m was accounted for by diamond drilling, up by 8% from the 3 470 000 m drilled in 2004. The 2005 total was the best one since 1996 when the interest generated by the Voisey's Bay nickel-copper-cobalt deposit in Newfoundland and Labrador and by diamond discoveries in the North resulted in increased activity in these regions and elsewhere.

Reflecting the continued focus on grassroots and off-mine-site types of work, some 88% (3 439 300 m) of total drilling activity in 2005 was dedicated to the exploration phase while the remaining 12% (450 400 m) was dedicated to deposit appraisal work (**Table 9**). In terms of provincial/territorial rankings, Ontario dominated exploration-phase drilling with 33% of the total metres drilled for that year while Québec and British Columbia combined for another 37% (**Table 7**). On the deposit appraisal side, British Columbia, Ontario and Québec accounted for 82% of all drilling in that work phase.

1.4.2 Drilling by Type of Company

In 2005, junior companies overtook senior companies and accounted for 52% (2 004 000 m) of all surface and underground drilling (including diamond drilling and other drilling methods) in the exploration and deposit appraisal phases (**Table 9**). In 2004, junior companies had accounted for 46% of total drilling. Therefore, as could be expected after they surpassed senior companies in overall spending, junior companies are now the major player on the drilling field, even though they do not undertake much underground drilling.

The latter form of drilling will continue to be associated mostly with senior companies by virtue of their ownership of underground mining operations. In 2005, senior companies accounted for 83% of the underground drilling in both work phases. In line with earlier years, surface drilling activity was more evenly distributed as junior companies accounted for 60% (1 881 800 m) of the total, compared to 40% (1 277 700 m) for senior companies.

TABLE 7. SURFACE AND UNDERGROUND EXPLORATION AND DEPOSIT APPRAISAL DRILLING IN CANADA, (1) BY PROVINCE AND TERRITORY, 2004 AND 2005

Province/Territory	Surface Drilling			Underground Drilling			Total Drilling		
	Exploration	Deposit Appraisal	Total	Exploration	Deposit Appraisal	Total	Exploration	Deposit Appraisal	Total
	(000 metres)								
2004									
Newfoundland and Labrador	66.0	30.9	96.8	2.0	0.3	2.3	68.0	31.1	99.1
Nova Scotia	20.5	2.9	23.4	2.7	–	2.7	23.2	2.9	26.1
New Brunswick	33.6	–	33.6	–	–	–	33.6	–	33.6
Québec	610.3	35.8	646.1	53.5	175.7	229.2	663.8	211.5	875.3
Ontario	872.7	16.9	889.5	386.2	122.5	508.6	1 258.8	139.3	1 398.1
Manitoba	88.9	–	88.9	22.3	–	22.3	111.1	–	111.1
Saskatchewan	173.1	–	173.1	–	1.2	1.2	173.1	1.2	174.4
Alberta	3.0	6.4	9.3	–	–	–	3.0	6.4	9.3
British Columbia	374.7	94.5	469.2	41.6	22.3	63.8	416.3	116.7	533.0
Yukon	29.4	1.8	31.2	–	–	–	29.4	1.8	31.2
Northwest Territories	52.4	10.1	62.5	–	1.0	1.0	52.4	11.1	63.5
Nunavut	192.5	8.4	201.0	1.0	–	1.0	193.5	8.4	202.0
Total	2 517.2	207.4	2 724.6	509.2	322.9	832.2	3 026.4	530.4	3 556.8
2005									
Newfoundland and Labrador	110.6	28.9	139.5	–	–	–	110.6	28.9	139.5
Nova Scotia	30.7	5.5	36.2	–	–	–	30.7	5.5	36.2
New Brunswick	24.3	4.8	29.0	–	–	–	24.3	4.8	29.0
Québec	658.0	31.6	689.6	120.8	80.6	201.4	778.8	112.2	891.0
Ontario	868.6	7.3	876.0	270.4	120.0	390.4	1 139.0	127.4	1 266.4
Manitoba	190.1	–	190.1	28.2	–	28.2	218.3	–	218.3
Saskatchewan	318.8	0.5	319.3	4.2	–	4.2	323.0	0.5	323.5
Alberta	7.8	1.4	9.2	–	–	–	7.8	1.4	9.2
British Columbia	472.4	58.3	530.7	28.7	71.9	100.6	501.1	130.2	631.3
Yukon	61.1	21.2	82.3	0.8	–	0.8	61.9	21.2	83.1
Northwest Territories	67.8	13.7	81.5	–	4.5	4.5	67.8	18.2	86.0
Nunavut	175.9	0.1	176.0	–	–	–	175.9	0.1	176.0
Total	2 986.1	173.3	3 159.5	453.1	277.1	730.2	3 439.3	450.4	3 889.6

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
– Nil.
(1) Includes diamond drilling and other drilling methods such as rotary and percussion.
Note: Numbers may not add to totals due to rounding.

TABLE 8. SURFACE AND UNDERGROUND EXPLORATION AND DEPOSIT APPRAISAL DRILLING IN CANADA, 1985-2005

Year	Diamond Drilling			Other Drilling (1)		
	Metres Drilled			Metres Drilled		
	Exploration	Deposit Appraisal	Total	Exploration	Deposit Appraisal	Total
			(000 metres)			
1985	..	..	2 531	..	..	270
1986	..	..	3 616	..	..	55
1987	..	..	6 221	..	..	262
1988	..	..	6 206	..	..	211
1989	..	..	3 940	..	..	297
1990	..	..	3 702	..	..	241
1991	..	..	2 341	..	..	234
1992	..	..	1 889	..	..	139
1993	..	..	1 932	..	..	282
1994	..	..	2 626	..	..	213
1995	..	..	2 993	..	..	280
1996	..	..	3 898	..	..	169
1997 (a)	2 670	734	3 404	157	239	396
1998	2 024	433	2 458	58	82	140
1999	1 693	583	2 277	62	127	189
2000	1 490	559	2 049	22	9	31
2001	1 359	321	1 679	83	4	87
2002	1 830	476	2 306	99	13	112
2003	2 165	327	2 491	33	28	61
2004	2 977	493	3 470	49	38	87
2005	3 308	423	3 731	132	27	159

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
.. Not available.
(a) The exploration and deposit appraisal phases were adopted as part of the survey redesign in 1997.
(1) Other drilling methods include reverse circulation, rotary and percussion.

TABLE 9. SURFACE AND UNDERGROUND EXPLORATION AND DEPOSIT APPRAISAL DRILLING (1) IN CANADA, BY TYPE OF COMPANY, 2004 AND 2005

Type of Company	Exploration Drilling	Deposit Appraisal Drilling	Total by Type of Company
		(000 metres)	
2004			
Junior companies			
Surface	1 456.6	93.8	1 550.3
Underground	71.4	21.4	92.8
Subtotal	1 528.0	115.2	1 643.1
Senior companies			
Surface	1 060.6	113.7	1 174.3
Underground	437.8	301.6	739.4
Subtotal	1 498.4	415.2	1 913.7
Total	3 026.4	530.4	3 556.8
2005			
Junior companies			
Surface	1 821.5	60.3	1 881.8
Underground	39.8	82.4	122.3
Subtotal	1 861.3	142.8	2 004.0
Senior companies			
Surface	1 164.7	113.0	1 277.7
Underground	413.3	194.6	607.9
Subtotal	1 578.0	307.6	1 885.6
Total	3 439.3	450.4	3 889.6

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Includes diamond drilling and other drilling methods such as rotary and percussion.
Note: Numbers may not add to totals due to rounding.

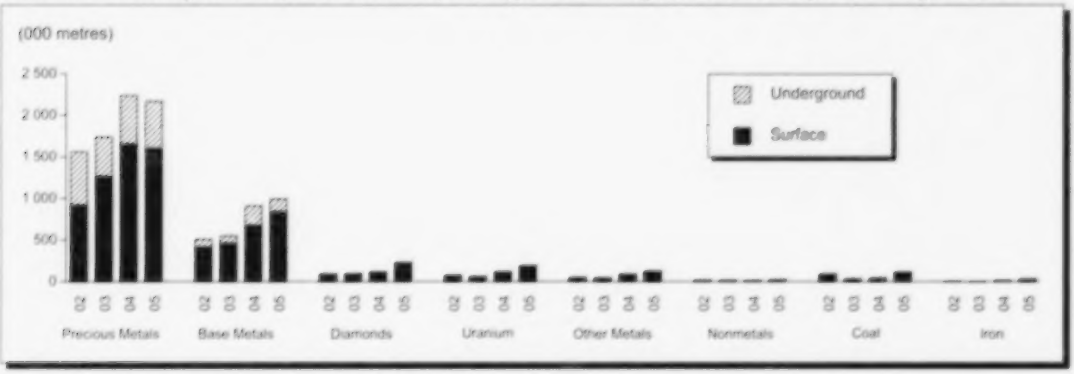
Exploration-phase drilling by senior companies was mostly conducted from the surface while their deposit appraisal drilling mostly took place underground. As can be expected, the drilling activities of junior companies were mainly focused on surface exploration.

1.4.3 Drilling by Type of Commodity Sought

In terms of total surface and underground drilling (including diamond drilling and other drilling methods) by group of commodity sought, **Figure 11** shows that exploration and deposit appraisal drilling activities in Canada in the period 2002-05 were primarily aimed at the discovery of precious metals and base metals. In 2005, a total of 2 172 950 m were drilled in the search for precious metals, representing 56% of total exploration and deposit appraisal drilling. Of this total, 1 607 210 m (74%) were drilled from the surface. Drilling for base metals accounted for 26% (996 130 m) of total exploration and deposit appraisal drilling and, once again, surface drilling was more prevalent with 85% (842 630 m) of the drilling aimed at this commodity group. The 2004 drilling statistics showed an increased focus on base metals that, in the context of the depleting ore reserves issue, was encouraging. However, the level of growth in base-metals drilling was much more subdued in 2005 (+9%) at a time when other commodity groups (diamonds, uranium, coal, other metals) saw increased drilling activity.

As can be expected, surface drilling also accounted for most of the exploration and deposit appraisal drilling activity targeting commodities other than precious metals and base metals in 2005. In fact, it represented virtually all of the drilling conducted within these two phases of activity for the discovery of diamonds, uranium, nonmetals, coal, and iron.

Figure 11
Surface and Underground Exploration and Deposit Appraisal Drilling (1) in Canada, by Commodity, 2002-05



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Includes diamond drilling and other drilling methods such as rotary and percussion.

1.5 CLAIM STAKING

Claim staking is another useful indicator of exploration activity. It is particularly efficient at rapidly highlighting emerging trends, such as the mid- and late 1990s exploration rush for diamonds, and at pinpointing areas of interest. Because claim staking usually happens at a relatively early stage of the exploration and deposit appraisal process, it also provides a good measure of current grassroots-type activities and a good insight into where future advanced (deposit appraisal) work could be focused.

Claim-staking rules and guidelines differ across Canada. In recent years, mineral tenure has evolved with the advent of Internet-based map staking and the granting of mineral rights to some Aboriginal groups who now administer their own regimes. Therefore, in order to ensure timeliness and accuracy of information on mineral tenure regulations in a particular Canadian jurisdiction, the reader is invited to contact the respective provincial/territorial mining recorder's office. Another useful source of information that summarizes the different mineral rights regimes found across Canada (i.e., ground vs. map staking; prospecting permits vs. claims; cost and size of claims, permits and leases; assessment work requirements; etc.) is the Provincial/Territorial Mining Rights Committee. This committee meets on an annual basis and maintains a number of summary tables on the administration of mineral tenure in Canada. One portal where these tables can be viewed is the web site of the Ontario Ministry of Northern Development and Mines at www.mndm.gov.on.ca/mndm/mines/lands.

1.5.1 New Claims Staked

Just as for spending and drilling, the other two indicators of mineral exploration activity studied in this chapter, claim-staking activity also increased in 2005. The area of new mineral claims staked increased by 21% from 19.0 million hectares (Mha) to 23.0 Mha (**Table 10**). Part of that increase, however, was the result of British Columbia moving to a new mineral titles administration system based on map staking. The 3.7-Mha increase in the area of new mineral claims staked in that province was also a result of strong metal prices leading to a dramatic increase in exploration and deposit appraisal activity. Saskatchewan also experienced a strong increase in its area of new mineral claims staked (+2.6 Mha), a gain that can be explained by the intensifying search for uranium in the Athabasca Basin and for diamonds in the Fort-à-la-Corne region.

1.5.2 Claims in Good Standing

In terms of area occupied by claims in good standing at the end of 2005, British Columbia (9.0 Mha), Alberta (8.3 Mha), Québec (7.5 Mha) and Saskatchewan (7.4 Mha) were the national leaders in a year that saw a strong increase of 38% in the Canadian total (**Table 11**). This 38%

TABLE 10. AREA OF NEW MINERAL CLAIMS (1) STAKED IN CANADA, 2004 AND 2005

Province/Territory	2004		2005	
	(hectares)	(%)	(hectares)	(%)
Newfoundland and Labrador	482 875	2.5	1 051 675	4.6
Nova Scotia	63 764	0.3	226 920	1.0
New Brunswick	102 816	0.5	49 536	0.2
Québec	1 546 640	8.2	2 543 508	11.1
Ontario	931 072	4.9	879 824	3.8
Manitoba	1 620 449	8.5	458 633	2.0
Saskatchewan	1 854 008	9.8	4 464 628	19.4
Alberta	4 727 344	24.9	5 234 000	22.8
British Columbia	1 169 050	6.2	4 864 000	21.2
Yukon	169 997	0.9	115 630	0.5
Northwest Territories	2 095 979	11.1	1 234 930	5.4
Nunavut	4 188 834	22.1	1 852 112	8.1
Total	18 952 828	100.0	22 975 396	100.0

Source: Provincial and territorial mining recorders.
(1) Excludes coal.
Note: Numbers may not add to totals due to rounding.

TABLE 11. AREA OCCUPIED BY CLAIMS IN GOOD STANDING IN CANADA, 2004 AND 2005

Province/Territory	Total Area	Area of Claims in Good Standing	Area of Claims/ Total Area
		(hectares)	(%)
2004			
Newfoundland and Labrador	40 572 000	1 596 550	3.9
Nova Scotia	5 549 000	116 164	2.1
New Brunswick	7 344 000	286 576	3.9
Québec	154 068 000	5 722 101	3.7
Ontario	106 858 000	3 183 600	3.0
Manitoba	64 995 000	3 492 970	5.4
Saskatchewan	65 233 000	3 498 000	5.4
Alberta	66 119 000	6 446 239	9.7
British Columbia	94 931 000	4 606 975	4.9
Yukon	48 345 000	1 087 975	2.3
Northwest Territories	143 232 000	3 931 426	2.7
Nunavut	199 400 000	7 323 318	3.7
Total Canada	996 646 000	41 291 894	4.1
2005			
Newfoundland and Labrador	40 572 000	2 213 800	5.5
Nova Scotia	5 549 000	277 782	5.0
New Brunswick	7 344 000	304 304	4.1
Québec	154 068 000	7 478 911	4.9
Ontario	106 858 000	3 368 512	3.2
Manitoba	64 995 000	5 533 316	8.5
Saskatchewan	65 233 000	7 441 852	11.4
Alberta	66 119 000	8 277 000	12.5
British Columbia	94 931 000	8 970 000	9.5
Yukon	48 345 000	1 238 404	2.6
Northwest Territories	143 232 000	5 275 174	3.7
Nunavut	199 400 000	6 807 782	3.4
Total Canada	996 646 000	57 186 837	5.7

Sources: Natural Resources Canada; provincial/territorial mining recorders.
Note: Data for Prince Edward Island are excluded.

increase in the total area occupied by claims in good standing comes after three years of stability in which approximately 4.1% of Canada's total landmass was occupied by such claims. It also indicates that some of the increased spending recorded in 2004 and 2005 has been incurred on new ground and that exploration and mining companies have decided that their new properties warrant further investigation.

All provinces/territories except Nunavut experienced increases in their area occupied by claims in good standing in 2005. Major gains were recorded in British Columbia (+4.4 Mha), Saskatchewan (+3.9 Mha) and Manitoba (+2.0 Mha). As a result of these and other increases, approximately 5.7% of Canada's total area was occupied by claims in good standing at the end of 2005.

1.6 SHORT-TERM OUTLOOK FOR EXPLORATION AND DEPOSIT APPRAISAL SPENDING IN CANADA

The analysis of three key indicators of exploration and deposit appraisal activity in Canada (drilling, claim staking, and particularly spending) leads to the conclusion that 2005 and 2006 have been exceptional years. If the 2006 forecast of $1722 million in expenditures holds true, almost $5000 million will have been invested in Canadian mineral exploration and deposit appraisal projects in the period 2003-06.

This growth period has been characterized by the growing importance of off-mine-site and exploration-phase spending, both inside and outside of traditional mining camps. Exploration and deposit appraisal activities have also been more widely distributed among the various mineral commodity targets. However, what stands out the most is the emergence of the junior mining sector as the dominant force in Canada's mineral exploration and deposit appraisal sector.

Total intended junior company spending is expected to exceed the $1 billion mark and reach $1122 million in 2006. Notwithstanding differences in surveying methodologies over the years, this total will be one of the highest ever recorded for junior company spending (in both current and constant 2005 dollars). In addition, Canadian junior mining companies now outspend senior companies in every mineral commodity group, undertake most of the drilling activity, and continue to increase their average spending. All of these factors point to junior companies having an important role to play in shaping the future of the Canadian mining industry.

Overall, 2007 should be another excellent year for the Canadian mineral exploration and deposit appraisal industry as the current period of intense activity is showing no sign of abatement. Prices remain strong across a wide range of mineral commodities, capital markets continue to view the industry favourably and, buoyed by positive news and overall excitement in the industry's prospects, the current momentum continues to build. Questions remain, however, on what concrete results, in terms of quality discoveries and projects advancing towards the production stage, will emerge from this outstanding exploration effort and whether or not companies can actually carry out all of their planned activities.

2. Regional Outlook

2.1 INTRODUCTION

This section presents comments from provincial and territorial officials on recent exploration and deposit appraisal activities in their respective jurisdictions and indicates their expectations for 2006 and beyond. It also highlights important fiscal, regulatory and geoscientific initiatives.

The reader should note that some provinces/territories, in their respective review of activities, use the term "exploration" in its broad sense; that is, it includes both exploration (grassroots) and deposit appraisal (advanced) components. The expenditure data mentioned by the different provincial and territorial authorities may also differ from those reported in Chapter 1 (official federal-provincial/territorial figures released by Natural Resources Canada [NRCan]) because some of these jurisdictions use different criteria or definitions in their own analyses.

2.2 NEWFOUNDLAND AND LABRADOR[8]

2005 Overview and 2006/07 Forecasts

Expenditures on mineral exploration in Newfoundland and Labrador totaled $48.6 million in 2005, a 46% increase over the previous year (**Figure 12**). Spending in Labrador increased by 155%. On the Island of Newfoundland, exploration expenditures decreased by 13%. In Labrador, the increase was fueled by exploration for uranium in the Central Mineral Belt, for iron ore in western Labrador, and for nickel in northern Labrador. On the Island, a significant decrease in exploration spending on gold (50%) was only partly offset by increased spending on base metals and other commodities, chiefly uranium.

In 2005, base-metal exploration accounted for 47.6% of total expenditures, followed by other commodities (e.g., iron ore, uranium and heavy minerals) at 40.5% and then by precious metals at 11.9% (**Table 12**). Base-metal exploration was split 56% for Labrador and 44% for Newfoundland. Over 98% of precious-metals exploration was conducted on the Island. The majority (86%) of exploration for other commodities was completed in Labrador.

Claim staking increased 117% over 2004 to 42 067 and, consequently, claims in good standing at year-end increased by approximately 24 000 (37%) over the same time period (**Figure 13**). Diamond drilling activity increased by about 32% in 2005 to an estimated 145 400 m (**Figure 14**). The increase in diamond drilling is mostly related to base-metal exploration on the Island.

In 2005, exploration and deposit appraisal spending highlights for Labrador consisted of: almost $6 million by New Millenium Capital Corp. for iron ore in western Labrador; $5.7 million by

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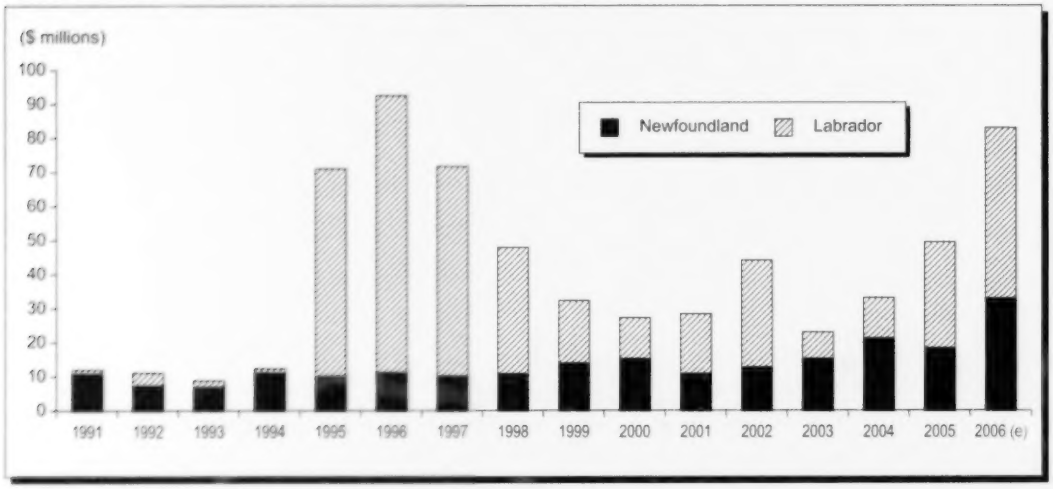
[8] The Newfoundland and Labrador review of activities was prepared by Ges Nunn. For more information, the reader is invited to contact Mr. Nunn by telephone at 709-729-6418 or by e-mail at gesnunn@gov.nl.ca.

Figure 12
Newfoundland and Labrador Exploration Expenditures, 1991-2006



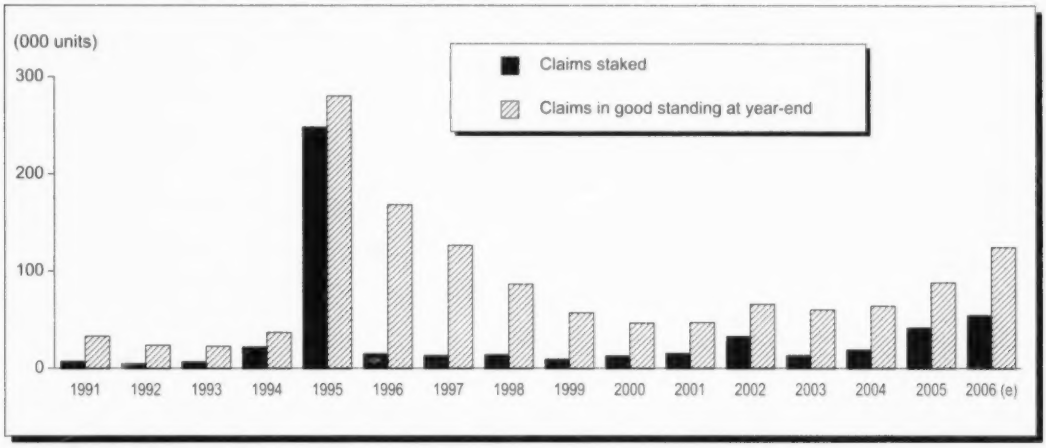
Source: Newfoundland and Labrador Department of Natural Resources.
(e) Estimate.
Note: Expenditures include administration and overhead costs.

TABLE 12. NEWFOUNDLAND AND LABRADOR EXPLORATION STATISTICS, 2001-07

	2001	2002	2003	2004	2005	2006 (e)	2007 (f)
				(dollars)			
Exploration expenditures	28 441 725	44 189 877	23 073 735	33 201 593	48 674 797	83 000 000	100 000 000
Base metals	22 585 446	33 975 242	11 353 274	15 855 261	23 162 846	..	..
Precious metals (gold)	2 720 449	7 000 053	9 796 698	11 781 737	5 799 608	..	..
Other	3 135 830	3 214 582	1 923 763	5 564 595	19 712 343	..	..
				(number)			
Claim staking (year-end)							
Claims staked	15 665	33 126	13 547	19 343	42 067	55 000	15 000
Claims in good standing	47 425	66 287	60 654	64 464	88 552	125 000	100 000
				(metres)			
Diamond drilling	47 176	66 696	58 618	110 158	145 310	210 000	250 000
Exploration and deposit	39 455	52 633	52 030	103 967	121 651	..	..
Production and development	7 721	14 063	6 588	6 191	23 659	..	..

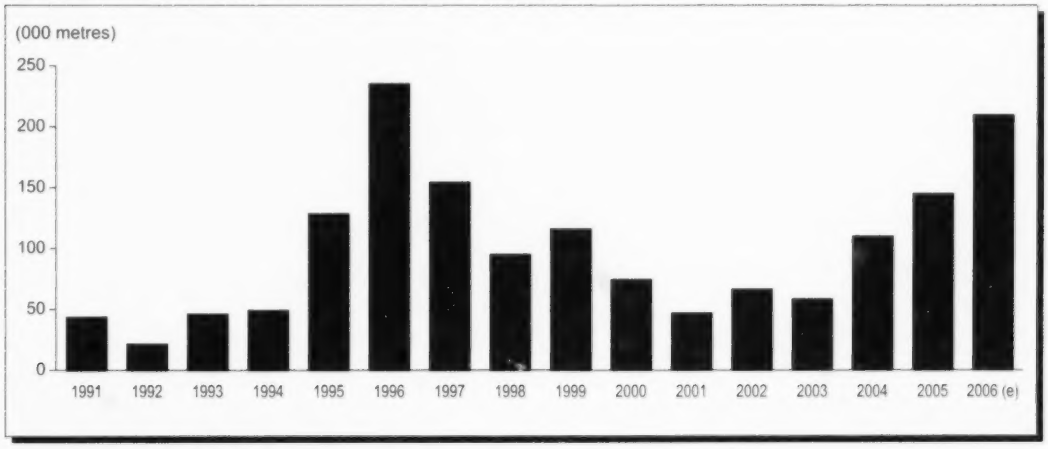
Source: Newfoundland and Labrador Department of Natural Resources.
.. Not available. (e) Estimate. (f) Forecast.
Note: Data are current as of October 2006.

Figure 13
Newfoundland and Labrador Claim Staking, 1991-2006



Source: Newfoundland and Labrador Department of Natural Resources.
(e) Estimate.

Figure 14
Newfoundland and Labrador Diamond Drilling, 1991-2006



Source: Newfoundland and Labrador Department of Natural Resources.
(e) Estimate.

Voisey's Bay Nickel Company Ltd. for nickel at Voisey's Bay; $5 million by Fronteer Development Group Inc. for uranium in the Central Mineral Belt in east-central Labrador; almost $2 million by Iron Ore Company of Canada in western Labrador for iron ore and dolomite; a combined $1.8 million by Markland Resource Development Inc. and Fenton Scott for heavy minerals in the Churchill River estuary; $1.4 million by Inco Limited, $1.2 million by Northstar Exploration Limited, $1 million by Celtic Minerals Ltd., and $0.9 million by Nortec Ventures Corp., all near Voisey's Bay in northern Labrador for nickel; almost $1 million by Santoy Resources Ltd. in the Central Mineral Belt for uranium; $0.9 million by Gallery Resources Limited for nickel in western Labrador; and approximately $0.75 million by Altius Resources Inc. for nickel in west-central Labrador, and by Crosshair Exploration & Mining Corp. for uranum and iron ore-copper-gold mineralization in the Central Mineral Belt in central Labrador.

Spending highlights for the Island in 2005 include: $3.6 million by Messina Minerals Inc. for base metals, mostly at Tulks South in west-central Newfoundland; $2.5 million by Altius Resources Inc. (for Rambler Metals and Mining plc), mostly for copper-gold at Rambler North on the Baie Verte Peninsula; $1.7 million by Rubicon Minerals Corporation, mostly for gold at properties in central and northeast-central Newfoundland; $1.3 million by Cornerstone Resources Inc. on gold and base-metal projects throughout the Island; and close to $0.7 million by each of Aur Resources Inc. for base metals in the vicinity of the future Duck Pond mine, Crosshair Exploration & Mining Corp. for gold in central Newfoundland, and Kermode Resources Ltd. at the Jackson's Arm gold property in White Bay.

For 2006, all estimates of exploration levels show an increase (**Table 12**). Exploration expenditures are estimated to increase approximately 70%, to about $83 million, and diamond drilling is forecast at approximately 210 000 m. The surge in exploration expenditures is attributed to increased exploration and deposit appraisal for uranium and iron ore in Labrador and for uranium and base metals on the Island.

In 2007, claim staking is forecast to return to historical levels, at around 15 000 claims, and exploration expenditures are forecast to increase to about $100 million.

New Mines

Inco Limited commenced mining nickel-copper-cobalt from the Ovoid deposit at Voisey's Bay in northern Labrador (**Figure 15**) in 2005. The first concentrate was shipped to Sudbury for processing in November 2005. In February 2006, Inco Limited announced that it had ramped up its production capacity at the Voisey's Bay mine from 110 to 120 million pounds (Mlb) of nickel in concentrate per annum.

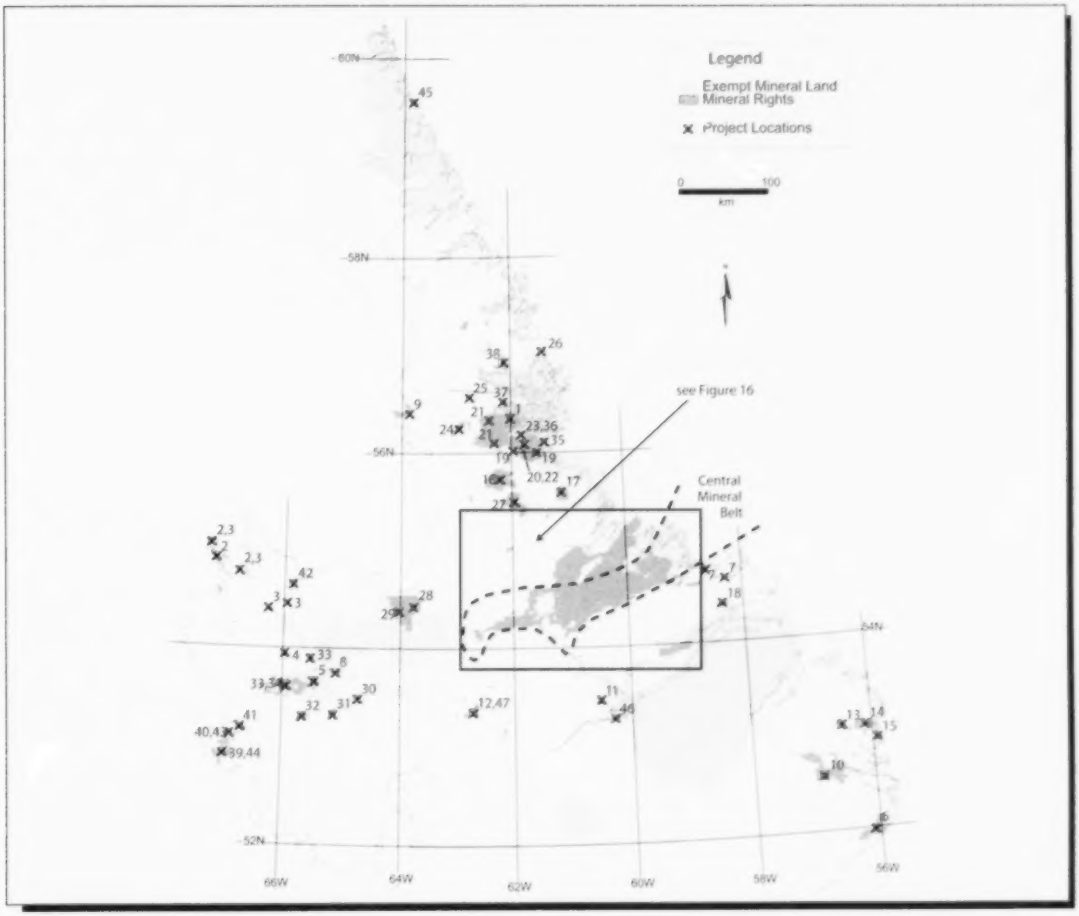
Mining of the Ovoid deposit is an open-pit operation. The deposit contains proven and probable reserves of 32 million tonnes (Mt) grading 2.82% nickel, 1.54% copper and 0.14% cobalt, and 50 Mt of indicated mineral resources grading 1.66% nickel, 0.78% copper and 0.09% cobalt.

Commencement of production at Aur Resources Inc.'s Duck Pond base-metal mine (zinc-copper-silver-gold) in central Newfoundland and at Anaconda Gold Corp.'s Pine Cove gold mine on the Baie Verte Peninsula (**Figure 17**) has been re-scheduled from fall 2006 to winter 2007.

The Duck Pond and Boundary base-metal deposits contain reserves of approximately 4.1 Mt at an average grade of 5.68% zinc, 3.29% copper, 59.3 grams per tonne (g/t) silver and 0.86 g/t gold. Production will consist of 76 Mlb of zinc, 41 Mlb of copper, 536 000 ounces (oz) of silver and 4100 oz of gold annually from 2007 to 2014.

The Pine Cove gold deposit contains probable diluted reserves of 2.333 Mt grading 2.76 g/t gold.

Figure 15
Property Location Map, Labrador, 2006



NEW MINE

1. Voisey's Bay

DEVELOPMENT-STAGE PROJECT

2. Lab Mag Iron Ore
3. Labrador Iron Mountain joint venture

EXPLORATION PROPERTIES

Uranium
(see also Figure 16)
4. Sims Lake
5. Gabbro Lake
6. Straits
7. Benedict Mountains
8. McKay River
9. George River
10. Alexis River
11. Goose Bay
12. Wilson Lake
13. Northwest Feeder
14. Hawke Bay
15. White Bear Arm
16. Notakwanon River
17. Flowers River
18. Rigolet

Nickel
1. Voisey's Bay
19. Voisey's Bay South
20. Garland Lake
21. Voisey's Bay West
22. Notakwanon
23. VB-2
24. Konrad
25. TL
26. Kiglapait Mountains
27. South Voiseys
28. Michikamau
29. Michikamau Lake
30. Mount Fyne
31. Ossokmanuan
32. Cissy Lake
33. Shabogamo
34. Colville Lake
35. Voisey's Bay Southeast
36. Makhavinekh
37. Anaktalik Brook
38. Kingurutik Lake

Iron Ore
39. Carol Lake
40. Wabush Lake
41. Julienne and Bruce Lakes
42. Snelgrove Lake
43. Hollinger Lake
44. Lacs Monteron and Virot

Other Commodities
45. Iron Strand
46. Churchill River
47. Wilson Lake

Source: Newfoundland and Labrador Department of Natural Resources.

Atlantic Barite Ltd. commenced production of barite from the tailings from the former Buchans mines in northwest-central Newfoundland (**Figure 17**) in 2006. The barite is for use in the offshore oil industry.

Development-Stage Projects

New Millenium Capital Corp. operates the LabMag Iron Ore project near Schefferville in western Labrador (**Figure 15**). An all-categories mineral resource of 5140 Mt containing 29.5 to 29.9 weight percent iron and yielding concentrates of 69.5 to 70 percent iron was reported in April 2006. As well as exploration and ongoing resource upgrades, New Millenium Capital Corp. is conducting pre-feasibility engineering (including mine and processing facility design), environmental and economic studies. Mining and concentrating of the magnetite ore will take place near Howells River northwest of Schefferville; the proposed site of the pellet plant is at Ross Bay Junction on the Trans-Labrador Highway, 200 kilometres (km) south of Schefferville.

In the same area of western Labrador, Labrador Iron Mines Limited, a wholly owned subsidiary of Anglesey Mining Corp., operates the Labrador Iron Mountain joint venture on 134 claims (mostly optioned from Energold Minerals Inc. and Fenton Scott) distributed among eight properties (**Figure 15**). In 2006, Labrador Iron Mines Limited completed a pre-feasibility study that included an engineering and economic scoping study of the James mine (past producer) and Knob Lake deposits. The mining proposal envisages production of direct-shipping-grade lump (67% iron) and sinter (63% iron) ores. A feasibility study is scheduled for completion by late 2007.

The Beaver Brook antimony deposit is located in central Newfoundland (**Figure 17**) and contains an all-categories resource of 1.943 Mt of 4.32% antimony at a 2% antimony cut-off. Beaver Brook Antimony Mine Inc. plans to reactivate the mine in 2007.

2006 Exploration Highlights - Labrador

Exploration in Labrador in 2006 was directed mainly toward nickel, iron ore and uranium. Properties are shown in **Figure 15** unless noted otherwise.

Uranium

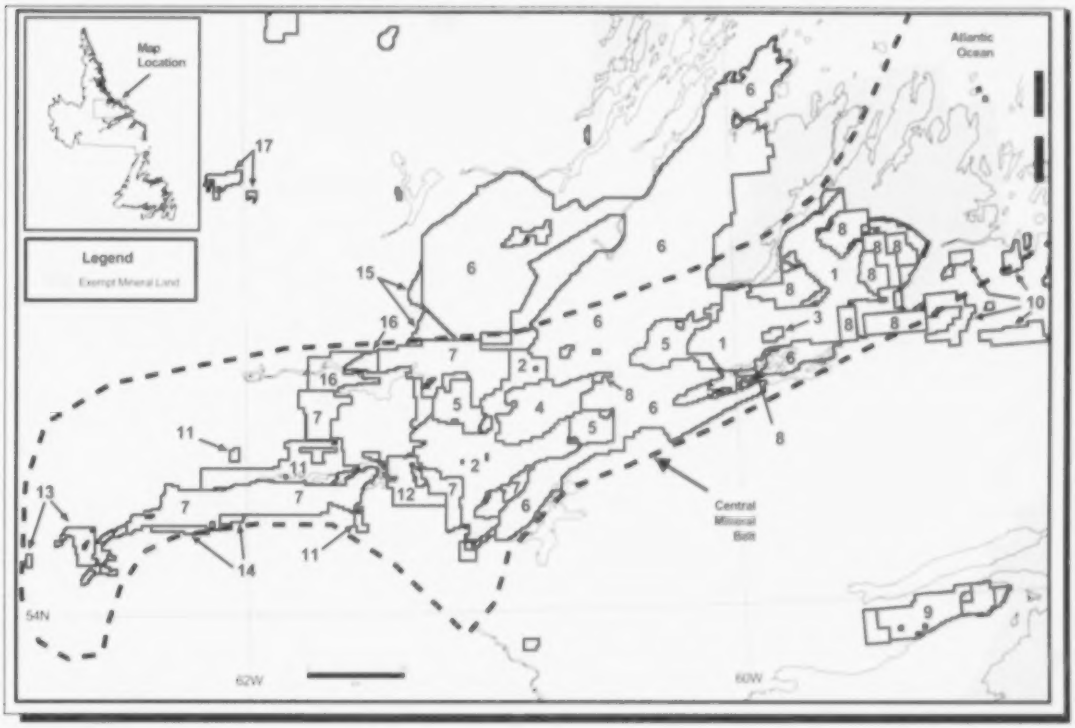
In 2005, Fronteer Development Group Inc. and joint-venture partner Altius Resources Inc. completed almost 10 000 m of diamond drilling on a 3192-claim property in the eastern part of the Central Mineral Belt. Most of the diamond drilling was conducted on the Michelin uranium deposit. In March 2006, the partnership formed Aurora Energy Resources Inc. to control the 3248-claim Central Mineral Belt project (**Figure 16**) and reported that the all-categories resource estimate for the Michelin deposit now stands at 35.6 Mlb of U_3O_8.

In 2006, Aurora Energy Resources Inc. plans to complete a 20 000-m diamond drilling program designed to further upgrade the resources at the Michelin deposit. An additional 20 000 m of diamond drilling is planned for other uranium deposits and prospects on the property. Aurora Energy Resources Inc. estimates that its spring 2006 to winter 2007 exploration program will cost $14.5 million.

The exploration program commenced in early May. To date, diamond drilling has extended the Michelin deposit down dip to a vertical depth of 730 m and partially constrained the flanks of the deposit. The highest grade results have been obtained from a broad zone in the core of the deposit at 400 m to over 600 m depth and still open in that direction. In-fill drilling of the high-grade area of the deposit will continue for the remainder of 2006.

Elsewhere on the property, Aurora Energy Resources Inc. has completed a gravity survey at Melody Lake and diamond drilling at Jacques Lake and White Bear Lake. Diamond drilling at Jacques Lake

Figure 16
Property and Disposition Map, Central Mineral Belt, October 2006



EXPLORATION PROJECTS AND PROPERTIES

Uranium
1. Central Mineral Belt
2. Moran Lake
3. Mustang Lake
4. Bruce River
5. Central Mineral Belt East
6. Labrador East
7. Seal Lake Area
8. Eastern Central Mineral Belt
9. Lake Melville
10. Mount Benedict
11. Seal Lake
12. Pocketknife Lake
13. Letitia Lake
14. Thomas River
15. Mistinippi Lake
16. Snegamook Lake

Nickel-Copper
17. Harp Lake

Source: Newfoundland and Labrador Department of Natural Resources.
Note: Detailed mineral claim maps are available for viewing online at http://gis.geosurv.gov.nl.ca.

indicates the potential for multiple uranium deposits on the property. Additional drilling is planned for Jacques Lake, White Bear Lake and Melody Hill, as well as for Otter Lake, Michelin East, Post Hill, and the Rainbow uranium deposit.

Aurora Energy Resources Inc. has commissioned SNC-Lavalin Inc. to undertake a preliminary engineering study of the Michelin deposit. The study is to include design criteria for a mine and processing facilities, as well as permitting and other logistics and infrastructure.

In December 2005, Crosshair Exploration & Mining Corp. reported a resource of 688 000 lb of U_3O_8 from the Moran Upper "C" zone in its Moran Lake project (**Figure 16**). The Moran Lake project is located in the eastern part of the Central Mineral Belt, 65 km west of the Michelin deposit. In May 2006, Crosshair completed Phase 1 (2900 m) of its 2006 diamond drilling program at the

Moran "C" zone uranium prospect. Phase 2 commenced in June with a gravity survey at the Moran "C" prospect and 30-40 in-fill diamond drill holes are planned for the Moran Upper "C" zone. The earlier results from the Phase 2 diamond drilling program at the Moran Upper "C" zone include consistently good assays, particularly from the eastern end of the zone where the mineralization has also been extended down dip.

Prospecting, trenching and sampling programs have been completed at other locations on the property, including the Moran "B" zone, Area 1, Area 51, and Moran Heights, and new occurrences of uranium have been found in several other areas. Diamond drilling is ongoing or is planned for Moran "B," Area 1, Moran Heights, and Area 51, and at new discoveries such as Madsen Lake, Armstrong and Blue Star as part of the Phase 2 program. A new uranium-bearing boulder train was located in the up-ice direction from the mineralization at Moran "B." An airborne radiometric and magnetic survey will be completed over the Croteau Lake area.

In 2006, diamond drilling on this 2684-claim property will total approximately 23 000 m, mostly to upgrade the resource at the Moran "C" zone.

Also in the eastern part of the Central Mineral Belt, Santoy Resources Ltd. operates a 50:50 joint venture with Monster Copper Resources Inc. on the 62-claim Mustang Lake and 1080-claim Bruce River properties (**Figure 16**). Limited diamond drilling was completed in 2005 on the Mustang Lake property. Additional diamond drilling, designed to locate the sources of the South Prospect, Irving Zone and Mustang East boulder trains on the Mustang Lake property, was completed in June 2006, and in July, Monster Copper Resources Inc. reported significant uranium mineralization at the South Prospect. Subsequently, fieldwork was relocated to the Bruce River property and prospecting and mapping have confirmed both historic uranium mineralization and newly discovered zones. Santoy Resources Ltd. holds an additional 1872 claims in four adjacent or nearby properties in its Central Mineral Belt East project (**Figure 16**).

Bayswater Uranium Corporation is exploring the largest uranium-related property position in the province. The 16 860 Labrador East claims are located in the eastern half of the Central Mineral Belt (**Figure 16**), between Aurora Energy Resources Inc. and Crosshair Exploration & Mining Corp., and in adjacent areas to the north of the belt. Bayswater Ventures Corp. has completed a compilation of historical data and a 41 100-line-km airborne geophysical survey. Prospecting was conducted concurrently with the summer 2006 radiometric and magnetic airborne survey, and processing of the airborne survey data has generated, so far, over 80 targets for ground follow-up in the fall of 2006. Initial follow-up fieldwork has confirmed a number of historic occurrences and has also discovered new zones of radioactivity and/or uranium mineralization. Bayswater Uranium Corporation has estimated its 2006 exploration program at $3.4 million.

Since mid-2005, Silver Spruce Resources Inc. has acquired, through staking and options, 4963 claims in properties scattered throughout the Central Mineral Belt, including its Seal Lake Area projects and Eastern Central Mineral Belt projects (**Figure 16**). The claims have been optioned to Universal Uranium Ltd. ($2 million in exploration over three years for a 60% interest), which has budgeted $1 million for its 2006 exploration program. The exploration program commenced with a compilation of historical data and 10 000 line-km of airborne geophysical survey. Silver Spruce Resources Inc. commenced ground follow-up in late August and reports a large (400 m x 500 m) area of strongly anomalous radioactivity and uranium mineralization in grab samples from the Kanairiktok River area. Trenching has been completed and diamond drilling is planned for winter 2007 at this location; follow-up fieldwork on other targets generated by the processing of its airborne radiometric and magnetic geophysical surveys is ongoing. At the end of October 2006, Silver Spruce Resources Inc. staked an additional 200-claim property in its Eastern Central Mineral Belt area.

In western Labrador, Consolidated Abaddon Resources Inc. holds title to 612 claims in two properties at Sims Lake and Gabbro Lake. Consolidated Abaddon Resources Inc. has completed airborne

geophysics and prospecting, mapping, and ground geophysical follow-up programs on the properties. Diamond drilling commenced in August on the 206-claim Sims Lake property, which is now under option to International Uranium Corporation (initially, $450 000 in exploration over two years for a 51% interest); ground geophysical and prospecting surveys also are planned.

From October 2005 to October 2006, many new uranium exploration projects were established.

Silver Spruce Resources Inc. staked at its Straits property, north of Red Bay (800 claims); at Lake Melville, northeast of Happy Valley-Goose Bay (758 claims; **Figure 16**) and at Mount Benedict, east of the Central Mineral Belt (1048 claims; **Figure 16**). Monster Copper Resources Inc. staked in the Smallwood Reservoir area of western Labrador at McKay Lake (267 claims), and in the Benedict Mountains in eastern Labrador (538 claims in two properties). A part of Freewest Resources Canada Inc.'s George River project is located in Labrador, abutting the Quebec border west of Nain (502 claims). Silver Spruce Resources Inc.'s plans for its Straits, Lake Melville and Benedict Mountains projects include compilation and airborne geophysics, and follow-up fieldwork on targets generated by processing of the airborne survey. Freewest Resources Canada Inc. commenced an airborne survey on its George River properties in Quebec and Labrador in September 2006. Follow-up fieldwork will consist of prospecting and reconnaissance mapping.

The Venila Development Company Inc. (2358 claims) and Tripple Uranium Resources Inc. (810 claims) established a combined project around the Alexis River in southeast Labrador. Tripple Uranium Resources Inc. also holds, among others, property positions at Seal Lake (987 claims), at Pocketknife Lake (494 claims), west of Letitia Lake (241 claims), and near the Thomas River (101 claims) in the western half of the Central Mineral Belt (**Figure 16**); northwest of Goose Bay (184 claims) and at Wilson Lake (139 claims) in central Labrador; and at the Northwest Feeder River (404 claims) and the Straits (95 claims) in southeast Labrador. The Venila Development Company Inc. also staked properties at Mistinippi Lake (223 claims) and at Snegamook Lake (132 claims) north of the Central Mineral Belt (**Figure 16**), and at Hawke Bay (700 claims) and White Bear Arm (217 claims) in southeast Labrador.

As well, 10565 Nfld Inc. has a 274-claim property at Wilson Lake in central Labrador, White Bear Resources Incorporated holds 500 claims at Snegamook Lake and 100 claims at Mistinippi Lake north of the Central Mineral Belt (**Figure 16**), and Altius Resources Inc. operates programs on a 112-claim property near the Notakwanon River in northern Labrador and on a 50-claim property on the Alexis River in southeast Labrador.

On October 31, 2006, uranium exploration was initiated on additional properties at Flowers River in northern Labrador by Altius Resources Inc. (790 claims); north of Rigolet in eastern Labrador by Tripple Uranium Resources Inc. (322 claims); and in the Eastern Central Mineral Belt (**Figure 16**) by Altius Resources Inc. (363 claims), by Silver Spruce Resources Inc. (200 claims), by Cornerstone Resources Inc. (162 claims), and by Bayswater Ventures Corp. (71 claims).

Nickel

At the 2229-claim Voisey's Bay property, Voisey's Bay Nickel Company Limited is continuing with a major exploration and deposit appraisal program on the satellite nickel-copper-cobalt deposits around the Voisey's Bay mine. Over the last two years, Voisey's Bay Nickel Company Limited has completed over 37 000 m of diamond drilling and borehole geophysics at annual exploration program costs of $4-$6 million. Current exploration is focused on the Reid Brook zone and the Western extension to the west of the mine. In June, parent company Inco Limited reported results of diamond drilling at the Reid Brook zone. Mineralization is now interpreted as occurring in two zones; ongoing diamond drilling is designed to firm up resource estimates for these zones.

Since August 2005, Inco Limited has staked 6924 claims at Voisey's Bay South surrounding its Garland Lake property. In spring 2006, Inco Limited completed an airborne geophysical survey over

the area. Under a data-sharing agreement, Inco Limited also completed the survey over adjacent property held by Celtic Minerals Ltd. at Voisey's Bay West (760 claims), by Cornerstone Resources Inc. at Garland Lake (210 claims in two properties under an option to Celtic Minerals Ltd. [see below]), and by Freeport Resources Inc. at its Notakwanon property (23 claims).

Southwest of the Voisey's Bay mine, Celtic Minerals Limited has completed airborne and follow-up ground geophysical surveys on its Voisey's Bay West property and on its Garland Lake property option from Cornerstone Resources Inc. ($3 million over four years for 51%). At its joint venture with Merrex Gold Inc. (451 of the 760 claims at Voisey's Bay West), Celtic Minerals Ltd. is conducting diamond drilling on deep magnetotelluric, magnetic and gravity targets.

In September 2006, the Celtic Minerals Ltd. and Merrex Gold Inc. joint venture optioned the adjacent 60-claim VB-2 property from CanAlaska Ventures Ltd. and Columbia Yukon Explorations Inc. ($1.6 million over four years for 100%); detailed ground geophysical surveys are planned.

Also actively exploring for nickel in the Voisey's Bay area are Cornerstone Resources Inc. on the 465-claim Konrad property to the west of Voisey's Bay, Nortec Ventures Corp. on its 121-claim TL property option from Vulcan Minerals Inc. to the northwest of Voisey's Bay ($1.5 million over five years for 51%), and in May 2006, Blue Ridge Resources Ltd. acquired 502 claims having nickel potential in the Voisey's Bay West area.

North-northeast of Voisey's Bay, Northstar Exploration Limited holds 100 claims for nickel in the Kiglapait Mountains, and south of Voisey's Bay, SVB Nickel Company Ltd., Donner Metals Ltd. and Commander Resources Ltd. maintain 1626 claims at the South Voisey's nickel project.

At Harp Lake in north-central Labrador (**Figure 16**), Tripple Uranium Resources Inc. holds 164 claims in two properties having nickel-copper potential.

In west-central and western Labrador, the larger, active nickel exploration projects are at Altius Resources Inc.'s Michikamau property in the northeastern Smallwood Reservoir area (1771 claims) and on four properties held by Brilliant Mining Corp. in the general area of the Smallwood Reservoir (2711 claims). Brilliant Mining Corp. completed airborne geophysical surveys over its four properties (Michikamau Lake, Mount Fyne, Ossokmanuan, and Cissy Lake). Follow-up work on targets generated by the airborne surveys consisted of prospecting and diamond drilling at Brilliant Mining Corp.'s Michikamau Lake property (1960 claims); diamond drilling intersected semi-massive sulphides at shallow depth. Gallery Resources Limited maintains 2689 claims in three properties at the Shabogamo project in western Labrador. Also, in October 2006, White Bear Resources Incorporated acquired 317 claims near Colville Lake in western Labrador having nickel and, locally, uranium potential.

On October 31, 2006, nickel exploration programs were initiated through staking in northern Labrador by Inco Limited at Voisey's Bay Southeast (273 claims); by Altius Resources Inc. (258 claims), Cornerstone Resources Inc. (116 claims) and Celtic Minerals Ltd. (52 claims) in the Makhavinekh area between VB-2 and Garland Lake; by Cornerstone Resources Inc. at Anaktalik Brook (157 claims); and by Hot Rock Uranium Corp. (167 claims) and Teck Cominco (83 claims) near Kingurutik Lake.

Iron Ore

In addition to exploration associated with the development-stage projects, iron ore exploration is also being conducted in western Labrador by Iron Ore Company of Canada on 825 claims in three properties (Carol Lake, Wabush Lake, and Julienne Lake) and on 10 831 hectares (ha) in mining leases (at Carol Lake and Wabush Lake) by Bedford Resource Partners Inc. (159 claims) at Snelgrove Lake and by 3099869 Nova Scotia Ltd. (52 claims) at Hollinger Lake. In late September 2006, Canadian Maple Leaf Investment Co. Ltd. staked 345 claims in five areas in western Labrador: Snelgrove Lake, Julienne Lake, Bruce Lake, Lac Monteron, and Lac Virot.

Other Commodities

Heavy-mineral-sand exploration is being conducted by Freeport Resources Inc. at Iron Strand in northern Labrador (149 claims) for garnet and by Markland Resource Development Inc. in the Churchill River estuary at Happy Valley-Goose Bay (577 claims) for garnet, zircon, and titanium-iron oxides. Freeport Resources Inc. has called for "expressions of interest" in developing its Iron Strand garnet deposit. Markland Resource Development Inc. has initiated preliminary engineering and market studies.

Torngait Ujaganniavingit Corp. is exploring for ceramic-grade feldspar near Wilson Lake in central Labrador (84 claims).

2006 Exploration Highlights - Newfoundland

Exploration on the Island of Newfoundland in 2006 focused on base metals and gold. Properties are shown in **Figure 17** unless noted otherwise.

Base Metals

The past-producing Ming and Ming West copper-gold mines are located on the Baie Verte Peninsula in the Rambler North property held by 51190 Newfoundland & Labrador Inc. The project is controlled by Rambler Metals and Mining plc., in which former owner and continuing project operator, Altius Resources Inc., now holds a 30% interest. The property consists of 38 claims and 631 ha in mining leases.

In 2004-05, Altius Resources Inc. completed several deep diamond drill holes, down-plunge along the Ming massive-sulphide ore horizon. The 2006 exploration program consists of close-spaced, directional diamond drilling from previously completed drill holes and is designed to upgrade the resources in the Ming massive sulphide and its underlying Ming Footwall zone. A new high-grade, massive-sulphide layer has been discovered in the Ming Footwall zone, and the zone has also been extended up dip. As well, Rambler Metals and Mining plc. has applied for mine dewatering permits to facilitate underground exploration.

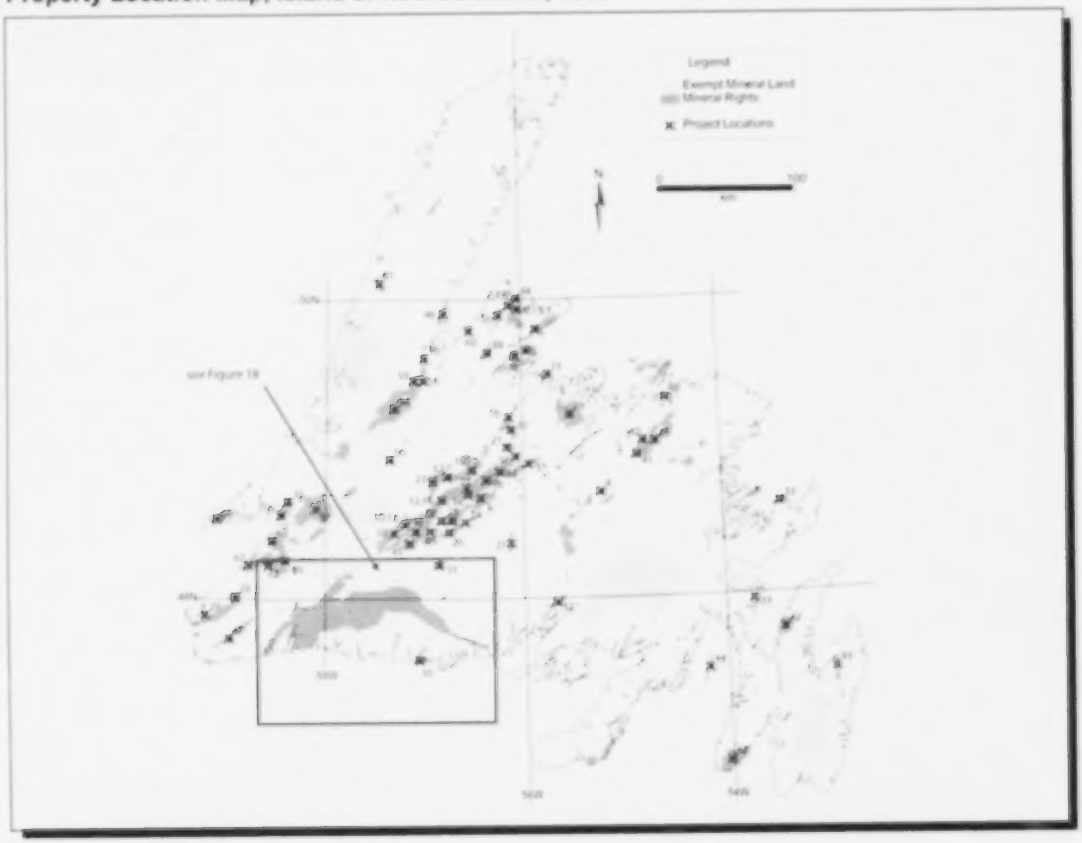
At the 45-claim Burtons Pond copper-lead-zinc-gold property on the Baie Verte Peninsula, Prominex Resource Corp. completed ground geophysics and diamond drilling. The core 24 claims in this property are under option from Buchans River Ltd. ($0.625 million over four years for 70%).

Other copper and copper-gold exploration programs in the region are Aurogin Resources Ltd. at Rambler on the Baie Verte Peninsula (396 claims) and Cornerstone Resources Inc. at Colchester on the Springdale Peninsula (181 claims). Also on the Springdale Peninsula, Ursa Major International Inc. announced that it would acquire the 82-claim Little Deer copper property from British Canadian Mines Ltd. The property contains the past-producing Little Deer and Whalesback copper mines.

In December 2004, Messina Minerals Inc. discovered the Boomerang massive-sulphide horizon on its Tulks South property near Victoria Lake. Since then, approximately 30 000 m of diamond drilling have been completed on the Boomerang zinc-lead-copper-silver deposit and on the underlying Domino horizon (discovered in February 2006). An additional 43 000 m of diamond drilling are planned for 2006 on these and several other base-metal prospects in the Tulks South property as part of a $6.5 million exploration program. Messina Minerals Inc. announced that it had completed its earn-in requirements for a 100% interest in the property from Falconbridge Limited in April 2006.

Diamond drilling has extended both the Boomerang and Domino massive-sulphide lenses. In-fill diamond drilling designed to help complete a resource estimate is in progress. Regional prospecting programs have located an estimated 460-tonne (t) massive-sulphide boulder and have also helped

Figure 17
Property Location Map, Island of Newfoundland, 2006



NEW MINES

1. Duck Pond
2. Pine Cove
3. Buchans

DEVELOPMENT-STAGE PROJECTS

4. Beaver Brook

EXPLORATION PROJECTS AND PROPERTIES

Base Metals
1. Duck Pond
2. Pine Cove
5. Rambler North
6. Burtons Pond
7. Rambler
8. Colchester
9. Little Deer
10. Tulks South
11. Long Lake
12. Bobby's Pond
13. Tulks Hill
14. Tulks North
15. Pilley's Island
16. Gullbridge
17. Buchans
18. Buchans Junction
19. Mary March
20. Powderhorn Lake
21. Lake Bond and Reid Lot 50
22. Hungry Hill
23. Buchans Southwest
24. Noel Paul's Brook
25. South Tally Pond
26. Lake Douglas
27. Great Burnt Lake
28. Point Learnington
29. Codroy
30. Grey River
31. Granite Lake
32. Hearts Delight
33. Bonavista
34. Merasheen Island
35. Twentieth Brook
36. Turners Ridge

Gold
37. Golden Promise
38. South Golden Promise
39. Joe Batts Linear
40. Wings Point - Titan
41. Golden Bullet
42. Linear
43. Avalon
44. Ming's Bight
45. Valentine Lake
46. Jackson's Arm
47. Cape Ray
48. El Strato
49. Pine Cove
50. Dorset
51. Stog'er Tight
52. True Grit
53. Branch

Uranium
54. Rocky Brook
55. Fischells River
56. Stephenville
57. Lost Pond
58. Grand Lake
59. Upper Humber
60. Westport
61. Inner Pond
62. Robinsons River
63. Flat Bay
64. North Brook

Other Commodities
62. Robinsons River
63. Flat Bay
65. Port au Port

Source: Newfoundland and Labrador Department of Natural Resources.

define two belts of highly prospective geology. Discovery of a volcanogenic-massive-sulphide style of alteration at the Hurricane zone, east of Boomerang, has led to the interpretation that the mineralization discovered to date lies along a single 3.2-km-long horizon. Additionally, farther south, the iron formation-type of massive-sulphide mineralization and related geology found at Curve Pond has been traced over a strike length of 10 km. Soil geochemical and gravity geophysical surveys are being conducted in the Curve Pond area.

In early May 2006, Messina Minerals Inc. optioned its adjacent 4009-ha Long Lake base-metal property to Aldrin Resource Corp. ($0.8 million over 1.5 years for 50%).

Between Victoria and Red Indian lakes, zinc-lead-copper deposit resource estimates have been reported by Mountain Lake Resources Inc. for Bobbys Pond (April 2006 all-categories resource of 0.93 Mt grading approximately 4.37% zinc, 0.82% copper, 0.42% lead and 16.06 g/t silver), by Prominex Resource Corp. for Tulks Hill (1980s historic inferred resource of 0.703 Mt grading 5.5% zinc, 2.1% lead, 1.1% copper and 45 g/t silver), and by Royal Roads Corp. for Daniels Pond on its Tulks North property (January 2005 inferred resource of 4.05 Mt grading 3.14% zinc, 1.35% lead, 0.18% copper and 96.9 g/t silver). Diamond drilling programs, designed to further define the resources, are under way or planned at these locations. At the 20-claim Tulks Hill property, Prominex Resource Corp. completed an airborne geophysical survey, and follow-up fieldwork included ground gravity and electromagnetic geophysical and soil geochemical surveys. Diamond-drill testing of known massive-sulphide mineralization and of a new 900-m-long airborne anomaly is under way. The property is under option from Buchans River Ltd. ($1 million over four years for 51%).

The Buchans-Roberts Arm Belt is located between the Baie Verte-Springdale and Victoria Lake areas. It is a belt of highly prospective geology that is host to several past-producing base-metal mines. From north to south, these predominantly zinc-lead-copper deposits are being further explored by Altius Resources Inc. at Pilley's Island (109 claims), by Copper Hill Resources Inc. near Gullbridge (177 claims for copper), and by Buchans River Ltd. around Buchans (490 claims). Elsewhere in the belt, base-metal exploration is being conducted by Vinland Resources Limited at Buchans Junction (617 claims), by Canstar Resources Inc. at Mary March (18 claims and 1705 ha of fee simple lands), by Copper Hill Resources Inc. at Powderhorn Lake (115 claims), by Prominex Resource Corp. at Lake Bond (57 claims), and by Celtic Minerals Ltd. at Hungry Hill and Buchans Southwest (282 and 102 claims, respectively). Canstar Resources Inc. completed ground geophysics at Mary March. In July 2006, Copper Hill Resources Inc. optioned the Powderhorn Lake zinc-nickel-gold property to Champion Natural Health.com Inc. ($1 million over three years for 70%) and, also in July, Prominex Resource Corp. optioned the 871-ha Reid Lot 50 zinc-copper property from the Reid Newfoundland Company Limited ($50 000 over four years for 100%).

East of the Tulks and Long Lake areas, active exploration for zinc is being conducted by Aur Resources Inc. in the Duck Pond area (251 claims, 3820 ha of fee simple mining grants, and 3241.5 ha in mining leases), by Cornerstone Resources Inc. at Noel Paul's Brook (93 claims), and by Altius Resources Inc. at South Tally Pond (249 claims). Mapping and core re-logging were completed on the South Tally Pond property.

In January 2006, Rubicon Minerals Corporation optioned the 298-claim Lake Douglas base-metal property from A.S.K. Prospecting & Guiding Inc. and associates (staged payments for 100%) and in June increased the combined South Tally Pond and Lake Douglas property to 585 claims. Rubicon Minerals Corp. completed prospecting, soil geochemistry and trenching; diamond drilling is planned.

Celtic Minerals Inc. is exploring for copper-gold on 166 claims near Great Burnt Lake in central Newfoundland.

TLC Ventures Corp. has completed its earn-in option from Rubicon Minerals Corporation for a 100% interest in the Point Leamington property in north-central Newfoundland and is re-evaluating the Point Leamington zinc-copper-gold-silver deposit. In 2005, TLC Ventures Corp. completed down-hole geophysical surveys and an airborne geophysical survey of the deposit area. In mid-June 2006, TLC Ventures Corp. staked an additional 1044 claims to the south and east of the deposit. An airborne geophysical survey is planned for fall 2006.

Cornerstone Resources Inc.'s 1120-claim Codroy copper project is located in southwest Newfoundland. Locally, these claims also have uranium, gypsum, potash, coal and methane potential. Following a year of reconnaissance exploration and evaluation, Phelps Dodge Corporation of Canada, Limited has decided to proceed with an option on the property ($3 million over three years for 51%). Cornerstone Resources Inc. completed diamond drilling on the property in September 2006.

Playfair Mining Ltd.'s 74-claim Grey River tungsten property, on Newfoundland's south coast, contains at least two high-grade tungsten-bearing veins. A historic resource estimate (1969 mineable reserve of 0.52 Mt grading 0.97% WO_3) was prepared by American Smelting and Refining Company (ASARCO) based on sampling of the Main Vein at surface, in underground workings, and by diamond drilling. In 2005, Playfair Mining Ltd. completed surface channel and bulk sampling. In 2006, diamond drilling of the Main Vein from surface was completed. Plans include additional diamond drilling of this vein from underground using the adit driven by ASARCO in 1966-69. These diamond drilling programs are designed to help upgrade the resource estimate.

As well, in February 2006, Playfair Mining Ltd. optioned the 23-claim Granite Lake tungsten property in south-central Newfoundland from Buchans River Ltd. ($50 000 over three years for 100%). Playfair Mining Ltd. controls 189 claims for tungsten at this location.

In January 2006, Altas Mining Company took up a 50% option on Kat Exploration's 430-claim Heart's Delight copper property on the Avalon Peninsula. Several other copper properties in eastern Newfoundland and on the Avalon Peninsula are also included in the now 576-claim option.

Also in the Bonavista Peninsula area of eastern Newfoundland, Cornerstone Resources Inc. maintains 357 claims in four properties for copper and, on Merasheen Island in Placentia Bay, Altius Resources Inc. holds 137 claims with base-metal and gold potential.

At Twentieth Brook, northeast of Stephenville in western Newfoundland, Noranda Inc. holds 146 claims having zinc potential, and southwest of White Bay, Spruce Ridge Resources Ltd. maintains 176 claims for lead at Turners Ridge. Noranda Inc. completed diamond drilling at Twentieth Brook in 2006.

Gold

In May 2006, Rubicon Minerals Corporation optioned its 1424-claim Golden Promise gold property, located southwest of Badger in central Newfoundland, to Crosshair Exploration & Mining Corp. ($4 million over four years for 60%). The property contains the Jaclyn Main and several other zones of gold-bearing quartz-vein arrays in which visible gold is common. The quartz-vein systems have been tested by trenching and diamond drilling, and additional diamond drilling commenced in early fall 2006.

The 1412-claim South Golden Promise project comprises three properties located to the southwest of Golden Promise and was optioned by Rubicon Minerals Corporation to Crosshair Exploration & Mining Corp. in February 2003. Exploration by Crosshair Exploration & Mining Corp. has identified several quartz-vein systems and diamond drilling was completed at its Snow White discovery in late summer 2006.

In 2005, Rubicon Minerals Corporation completed a diamond drilling program at H-Pond on its 725-claim Joe Batts Linear property near Gander in northeast Newfoundland. In January 2006, Rubicon Minerals Corporation reported bonanza-grade assays from a new discovery of gold-bearing float near H-Pond (five samples ranging from 248.68 to 798.87 g/t gold). Trenching and additional diamond drilling have been completed. Along strike to the northeast and southwest, respectively, Rubicon Minerals Corporation maintains gold properties at Wings Point-Titan (162 claims in five properties) and Golden Bullet (46 claims). Adjacent to H-Pond and Golden Bullet, Rubicon Minerals Corporation has optioned the 50-claim Linear property from the Kriask Syndicate. Visible gold-bearing quartz veins on the property have returned up to 433 g/t gold; core re-logging and additional prospecting are in progress.

Rubicon Minerals Corporation also maintains a project on the northeast Avalon Peninsula (255 claims) and, early in 2006, initiated a new project near Ming's Bight on the Baie Verte Peninsula (43 claims).

At the 502-claim Valentine Lake gold property in central Newfoundland, Richmont Mines Inc. completed three phases of diamond drilling and, in May 2005, reported inferred resources of 1.3 Mt grading 10.5 g/t gold containing 439 654 troy oz of gold. Plans include mapping, ground geophysics, additional diamond drilling, and data evaluation. The property was optioned from Mountain Lake Resources Inc. in late 2003 ($2.5 million over four years for 70%). Mountain Lake Resources Inc. fulfilled the terms of an underlying option for a 100% interest from Noranda Inc. in 2004.

The 172-claim Jackson's Arm gold property, in White Bay, is held by Kermode Resources Ltd. and contains both large-tonnage, low-grade, intrusion-hosted gold mineralization and higher-grade, sediment-hosted zones. During a diamond drilling program in December 2005, Kermode Resources Ltd. discovered a zone of gold mineralization that it has interpreted to be a feeder zone. In 2006, additional diamond drilling has intersected and will continue to test the geometry of this zone.

Cornerstone Resources Inc. completed diamond drilling at its 429-claim, Cape Ray gold-silver property in southwest Newfoundland. This project is an earn-in joint venture with Thundermin Resources Inc. ($1.75 million over five years for 55%).

On the Baie Verte Peninsula, Cornerstone Resources Inc. and earn-in joint-venture partner Agnico-Eagle Mines Ltd. ($1.95 million over four years for 51%) completed diamond drilling to test coincident soil geochemical and ground geophysical anomalies on the 159-claim El Strato gold property.

New Island Resources Inc. has completed several phases of diamond drilling near the past-producing Nugget Pond gold mine on the Baie Verte Peninsula and plans additional diamond drilling to test targets at other locations on the property. New Island Resources Inc. was scheduled to complete its option from Richmont Mines Inc. for a 100% interest in the property by mid-November 2006.

In October 2006, New Island Resources Inc. announced that Crew Gold Corporation would acquire the Nugget Pond mill. Crew Gold Corporation plans to process ore at the mill from its Nalunaq gold mine, which is located in Greenland. The two companies also announced that Crew Gold Corporation would option New Island Resources Inc.'s Glover Island gold property (127 claims and a 1925-ha mining lease) in western Newfoundland ($5 million over five years for 60%).

Also on the Baie Verte Peninsula, Anaconda Gold Corp. will continue exploration of gold zones on its Pine Cove property (660 ha in mining leases) and the nearby 76-claim Dorset property to the southwest. Several of these gold zones are close to the Pine Cove gold deposit. The Pine Cove gold deposit is scheduled to commence production in 2007 and Anaconda Gold Corp. is proceeding with plant purchasing for the mine.

At the end of June 2006, the Government of Newfoundland and Labrador issued a "call for proposals" for the exploration and possible development of the Stog'er Tight gold property on the Baie

Verte Peninsula. South Coast Ventures Inc. was awarded the rights to further explore and evaluate the property in October 2006. The property contains a historic (1989) resource of 670 000 t grading 6.8 g/t gold.

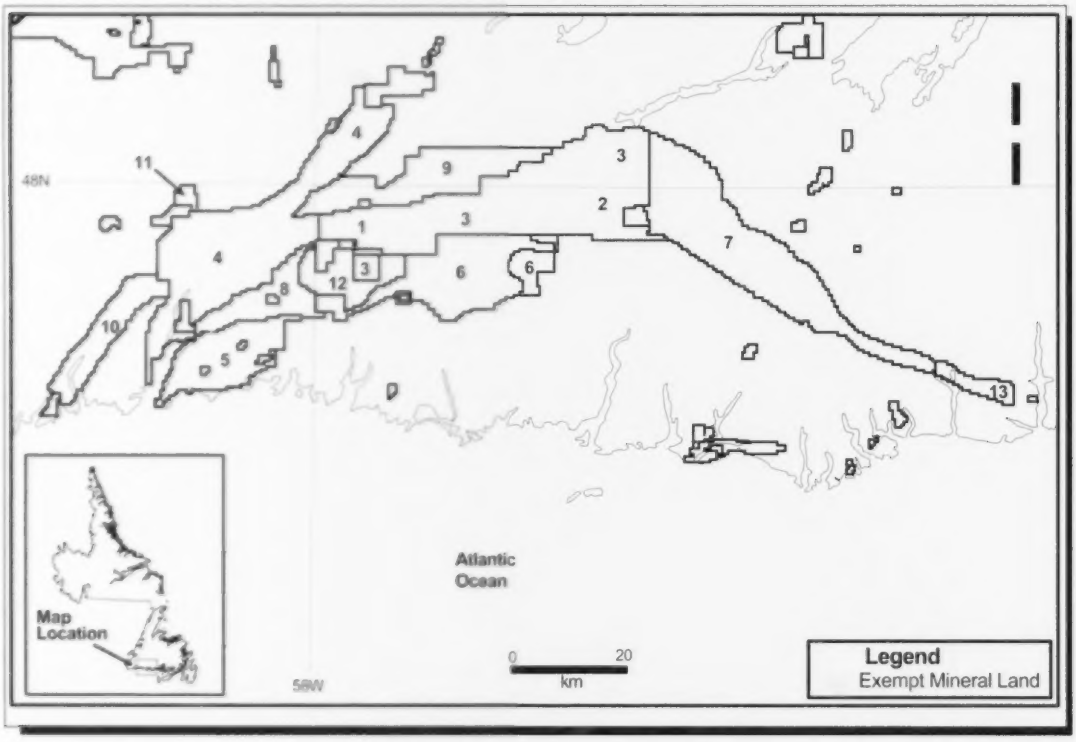
Moydow Mines International Inc. has withdrawn from its option on Cornerstone Resources Inc.'s 158-claim True Grit gold property in southern Newfoundland.

At the end of October 2006, Lewis Murphy and Noel G. Murphy initiated a gold exploration program at Branch (847 claims) on the Avalon Peninsula.

Uranium

In winter 2005, Commander Resources Ltd. acquired, through staking and options, two uranium exploration properties at Blue Hills and White Bear River in southern Newfoundland (**Figure 18**). In October 2005, Commander Resources Ltd. and Pathfinder Resources Ltd. staked over 1400 claims each, incorporating the original two properties into one linear area covering almost all of the

Figure 18
Property and Disposition Map, Western Hermitage Flexure, October 2006



EXPLORATION PROJECTS AND PROPERTIES

Uranium

1. Blue Hills
2. White Bear River
3. Central Hermitage
4. Hermitage West
5. La Poile Bay
6. Hermitage South
7. Hermitage East
8. Strickland
9. Hermitage North
10. Farmers Brook
11. Burke Brook
12. Peter Snout
13. Hare Bay

Source: Newfoundland and Labrador Department of Natural Resources.
Note: Detailed mineral claim maps are available for viewing online at http://gis.geosurv.gov.nl.ca.

western half of the Hermitage Flexure. Commander Resources Ltd. completed detailed fieldwork, sampling and geochemistry on the Blue Hills, White Bear River, and intervening Central Hermitage areas in 2005, and an airborne geophysical survey was completed over the whole property in early June 2006.

An additional 3434 claims were staked by the two companies during June and July 2006. Interpretation of the airborne geophysical survey generated several targets. Follow-up fieldwork has located zones of radioactivity and uranium mineralization in both boulders and bedrock. At the end of October 2006, including claims under option, Pathfinder Resources Ltd. held 6068 claims (at Hermitage West, La Poile Bay, Hermitage South, and Hermitage East), and Commander Resources Ltd. held 3147 claims (at Blue Hills, White Bear River, Central Hermitage, and the Strickland property) along the Hermitage Flexure (**Figure 18**).

Also in the western Hermitage Flexure, The Venila Development Company Inc. holds 930 claims at Hermitage North and Tripple Uranium Resources Inc. holds 193 claims at Hermitage South.

The Altius Resources Inc.-JNR Resources Ltd. joint venture completed an airborne geophysical survey and diamond drilling around three clusters of uranium-bearing boulders at the 437-claim Rocky Brook property in western Newfoundland.

From June to August 2006, Hot Rock Uranium Corp. acquired 3788 claims in 11 properties. Four properties are located at Farmers Brook (534 claims), at Burke Brook (53 claims), at Peter Snout (396 claims), and at Hare Bay (168 claims) along the Hermitage Flexure in southern Newfoundland (**Figure 18**); and three properties are in the Bay St. George Basin of western Newfoundland at Fischells Brook (188 claims), at Stephenville (350 claims), and at Lost Pond (1623 claims). The remaining four properties are located at Grand Lake (73 claims); near the Upper Humber River in the Deer Lake Basin (136 claims); at Westport and White Bay on the Baie Verte Peninsula (81 claims); and on the Great Northern Peninsula at Inner Pond (186 claims). Prospecting, trenching, and ground and airborne geophysical surveys are planned for these properties.

Also in western Newfoundland, Vulcan Minerals Inc. holds ground covering the uranium potential of its Robinson's River (1294 claims) and Flat Bay (345 claims) properties.

On October 31, Spruce Ridge Resources Ltd. staked additional ground in the Deer Lake Basin in western Newfoundland to bring its North Brook uranium property to 1783 claims.

Other Commodities

Vulcan Minerals Inc.'s Robinson's River and Flat Bay uranium properties have been explored for oil and gas for several years. In 2005-06, Vulcan Minerals Inc. completed seismic and aeromagnetic geophysical surveys and drilled several oil exploration wells. The properties also have potential for gypsum, salt, potash, coal and methane.

AggMapR Inc. is exploring for limestone and dolomite on 315 claims on the Port au Port Peninsula. A 15 000-m diamond drilling program was completed.

Government

Initiatives

The Mineral Incentive Program (Junior Exploration Assistance, Natural Stone Assessment and Prospector's Assistance) is in the third year of a three-year plan. The budget for 2006 is $2.5 million.

In 2006, a preliminary analysis of the Department of Natural Resources' mineral rights registries, including the Registry of Transfers, the Registry of Confidential Agreements, and the Mining Lease

Registry, was completed. The analysis was designed to scope out the requirements for posting all documents contained in these registries on the Department of Natural Resources web site in a searchable environment. Scanning of all documents will be completed in 2007.

Aboriginal Issues

The Labrador Inuit Land Claims Agreement (the Agreement) between the Labrador Inuit Association, the Government of Canada, and the Government of Newfoundland and Labrador came into effect on December 1, 2005. The Agreement settles all claims of the Labrador Inuit to land, resources and self-government rights in Labrador, based on Aboriginal rights and title. The Agreement is legally binding and protected under Section 35 of the *Constitution Act, 1982*, and can only be amended by agreement of the three parties.

The Agreement creates two categories of land: the Labrador Inuit Settlement Area (Settlement Area) and Labrador Inuit Lands. The Settlement Area consists of 72 520 square kilometres (km^2) of land and 48 690 km^2 of ocean (referred to as the Zone). Within that area there will be 15 800 km^2 of Inuit-owned land referred to as Labrador Inuit Lands. Inuit will have the most substantial rights and benefits in Labrador Inuit Lands, but will also have certain rights and benefits throughout the rest of the Settlement Area.

A new Inuit regional government, known as the Nunatsiavut Government, will have law-making powers under the Agreement, primarily on Labrador Inuit Lands and with respect to the Inuit.

A regional land-use plan will be developed for the Settlement Area that is scheduled to be completed within three years of December 1, 2005. The plan will come into effect through Nunatsiavut Government legislation with respect to Labrador Inuit Lands and through provincial legislation with respect to the Settlement Area outside of the Labrador Inuit Lands.

Exploration in the Settlement Area outside the Labrador Inuit Lands will continue under present provincial regulations. Until the land-use plan comes into effect, the Province will consult the Nunatsiavut Government regarding exploration approvals.

Exploration on Labrador Inuit Lands will be subject to the joint approval of the Province and the Nunatsiavut Government. Joint "Standards for Exploration in Labrador Inuit Lands" will be developed and made legally binding.

The Province announced, on September 8, 2006, the transfer of Crown land to the Government of Canada for the creation of a reserve for the Innu First Nation at Sheshatshiu in Labrador. Negotiations by the Province with the Innu Nation and the federal government on the Innu Land Claim were fast-tracked and continued through 2006.

2.3 NOVA SCOTIA[9]

Industry Overview

Exploration activities in Nova Scotia in 2006 continued on their upward spiral that started in 2003. In addition to gold, which always seems to be a key commodity in the province's exploration success stories, base metals and coal (both onshore and offshore) became significant new players on

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[9] This review was prepared by Paul K. Smith, Liaison Geologist, Geological Services Division, Nova Scotia Department of Natural Resources. For more information, the reader is invited to contact Mr. Smith by telephone at 902-424-2526 or by e-mail at pksmith@gov.ns.ca.

the exploration and development scene this year. The industrial mineral mainstay of the Nova Scotia mining industry has also seen significant exploration for a variety of industrial commodities such as marble, limestone and gypsum.

Economic Impact Overview

According to a 2006 report by Gardner Pinfold Consulting and CRA, Nova Scotia's mining industry can boast about one of the highest earning levels in the provincial economy: more than $1000/week in 2005. This is more than 40% higher than the average of all other economic sectors in the province. Mining contributed $400.4 million to the province's Gross Domestic Product (GDP) through direct and spin-off industry activities in 2005, the year in which the statistics were provided. A total of 5260 direct and indirect jobs were based on Nova Scotia's mining sector.

Exploration Overview

Gold exploration and development is almost exclusively focused within the Cambro-Ordovician Meguma Group of the southern and eastern mainland. Advanced projects are ongoing at three high-grade, lode-gold vein deposits and at two low-grade, bulk-mineable disseminated gold deposits in the eastern Meguma Terrane; one of these projects is currently in the development stage.

Base-metal exploration in the Carboniferous basins is currently very strong with one mine about to come into production and a second project poised for an underground bulk sample. These projects are on the mainland and Cape Breton Island, respectively.

The coal basins of the northern mainland and Cape Breton Island are again undergoing exploration for coal deposits, and interest in potential coal bed methane production is receiving major attention.

Gypsum production remains strong in Nova Scotia with the province's five producers operating at full capacity and one embarking on a major expansion. Both salt and aggregate production remain stable across the province.

The provincial forecast for exploration expenditures is projected to be over $6.2 million for 2006 (**Table 13**), a promising increase of $0.5 million from 2005. Total mineral claims under licence (new and re-issued) grew to more than 27 000, up from the 22 456 claims held in 2005. This translates into one million acres of land currently under licence. Diamond drilling activity showed a strong increase in total metres drilled to reach 42 000 m, up from the 21 900 m drilled in 2005 (**Table 13**). Much of this increase can be attributed to rotary air blast (RAB) exploration at several gold camps.

TABLE 13. NOVA SCOTIA MINERAL EXPLORATION STATISTICS, 1999-2006

	1999	2000	2001	2002	2003	2004	2005 (p)	2006 (f)
Exploration expenditures (field + overhead) ($)	3 800 000	3 500 000	2 900 000	2 000 000	3 200 000	6 500 000	5 704 121	6 273 377
Claim staking (new and reissued) (general + special licences) (no. of claims)	14 045	10 951	8 406	12 494	19 125	11 666	22 456	27 234
Exploration drilling (metres)	16 860	8 200	5 470	3 540	12 200	21 900	16 600	42 000

Source: Nova Scotia Department of Natural Resources.
(f) Forecast; (p) Preliminary.

Mining Expansions and Announcements

Coal

During 2006, several existing mines in the province initiated planned expansions to their operations. Pioneer Coal Limited initiated infrastructure modifications as mining of the eastern extension of the coal seam package continued along strike at its Stellarton open-pit operation where the company has been mining for several years. Production is continuing from its existing open pit and continual site reclamation is taking place in consultation with local community officials.

There has been serious interest in Nova Scotia's onshore and offshore coal resources, notably in the 100-km^2 Donkin Coal Resource Block, located offshore the community of Donkin at the eastern end of the Sydney coal field. The Donkin deposit, delineated in the early 1980s by DEVCO, has an estimated 1.9 billion t of coal resource hosted in five major seams. Late in 2004, the Province announced it would receive proposals for development of the Donkin deposit until March 2005. Three groups submitted proposals that were evaluated by an Evaluation Committee, which made recommendations to the Executive Council in June. A decision was then made to have each proponent make a presentation to the Evaluation Committee on certain aspects of their proposals. On December 15, 2005, the Minister of Natural Resources announced that the Xstrata Donkin Mine Development Alliance was the successful proponent for the Donkin Coal Resource Block in Cape Breton County. Over the next two years, the Alliance plans to conduct an extensive resource evaluation and feasibility study leading to the anticipated development of more than 200 Mt of the high-quality thermal and metallurgical Donkin Coal Resource Block. At present, the two tunnels have been re-opened and dewatering is well under way with the anticipated arrival at the coal faces in the first quarter of 2007. Pending positive results from the pre-feasibility study, production could begin in late 2009 with a projected annual production of 5 Mt of coal by 2012.

On December 28, 2005, Pioneer Coal Ltd. received environmental approval for a surface coal mine and reclamation project at the former Prince mine site in the Point Aconi Resource Block, Cape Breton. This reclamation mine project will extract approximately 1.6 Mt of coal over a seven-year period. This surface mine will restore heavily disturbed land for future land use. Pioneer Coal expects to be in operation at the Prince mine site by summer 2006.

In Pictou County, Pioneer Coal Ltd. has operated the Stellarton surface coal mine since 1996, producing about 220 000 tonnes per year (t/y). On September 21, 2005, the Premier and the Minister of Natural Resources announced the impending transfer of affected Crown lands to the town of Stellarton in three phases. During Phase I, lands not mined by Pioneer Coal were transferred immediately upon completion of surveying. In Phase II, lands on which mining is complete and reclamation is under way will be transferred when reclamation is completed. In Phase III, land presently being mined will be transferred when reclamation is completed. The provincial government has promoted this partnership between the municipality, the private sector and the province as a model of how reclamation mining can provide economic activity to an area and, at the same time, convert lands that were previously an environmental and public hazard into productive lands for future generations.

Gypsum

Fundy Gypsum Co., a division of U.S. Gypsum Canadian Mining Ltd., announced it would spend $10 million to expand its open-pit mining operations outside the town of Windsor in central Nova Scotia. It is anticipated that this expansion will ensure the future of the mine and its 150-160 person work force for at least 20 years. Work consists of detailed diamond drilling, environmental impact evaluation of a large gypsum deposit adjacent to its existing Miller Creek pit, and surface clearing. Subsequent to exploration and the environmental review process, it is anticipated that production will commence from this new deposit in 2007.

Quartz

Black Bull Resources Inc. received a mining permit to produce quartz from its Yarmouth County White Rock property late in 2003. During 2004, initial mine infrastructure was constructed and production began in June by way of portable crushing and sorting equipment. In late 2006, the company went through a significant managerial restructuring due to a lack of markets. Robert Cudmore was appointed interim President, Chief Executive Officer and Chief Financial Officer, and a new marketing team was formed to seek new sales for the high-quality white quartz products. Initial results suggest that the company is about to experience a major rebound in production after securing several significant new markets in the United States. Based on the latest diamond drill program, the company estimates total measured and indicated quartz resources of 12.1 Mt grading 97.4% SiO_2 and an additional 16 Mt of inferred resources. The total measured and indicated kaolin resources stand at 4.8 Mt grading 24.2% kaolin with inferred kaolin resources estimated at 6.3 Mt. The zone of mineralization is open at depth and along strike.

Marble

MacLeod Resources Limited is continuing the production of high-quality red marble blocks from its Kennedy's Brook quarry in southwest Cape Breton Island. In addition to local markets established over the last few years, blocks are currently being cut and shipped to Italy for polishing, where an Italian broker has been retained to market the product in that region. The company is also developing new markets in China where high demand for this unique product is being expressed and where low labour costs are providing the company with attractive opportunities for additional production. Important headway is being made towards the construction of a local processing facility for the creation of value-added products. A diamond drill program that is currently under way will assist the company in controlling the quality of its resource and help its marketing strategy. MacLeod Resources is also exploring for new and diverse rock types throughout the province in an attempt to expand its product line.

Mineral Exploration and Development Activity

Gold Exploration

Gold is never far off the radar screen in Nova Scotia and, once again, exploration for the metal is leading the way. Atlantic Gold NL, formerly known as Diamond Ventures, continued its feasibility study of the slate-hosted, disseminated gold mineralization at the Touquoy gold deposit at Moose River Mines near Upper Musquodoboit. Atlantic Gold entered into a joint venture on the deposit with Moose River Resources Inc. in 2003. The company has drilled 129 NQ diamond drill holes totaling 10 480 m to date and is continuing its Rotary Air Blast (RAB) drill program outside the deposit. The results continue to show great promise for this deposit with intersections up to 49 m grading 2.9 g/t gold. At present, Atlantic reports the deposit contains 11.28 Mt grading 1.8 g/t gold for 654 000 oz of gold hosted in its main Touquoy and Touquoy West pit areas. Development of the company's open pit is anticipated in 2007.

Atlantic Gold has also been very active in regional gold exploration on the eastern shore where it holds 100% ownership or joint-venture partnerships in a total of 6668 claims (1079 km^2) between Lake Charlotte in Halifax County and Goldenville in Guysborough County. Early in the spring, the company embarked on a reconnaissance RAB drill program in search of Touquoy-style, disseminated gold mineralization along strike of several of the gold districts and some other areas of known anomalous gold geochemistry. To date, more than 10 000 m have been drilled and promising results have been obtained for several areas. A zone of anomalous gold and arsenic (36 parts per billion [ppb] gold and 920 parts per million [ppm] arsenic) has been defined for 7 km along strike to the northeast of the past-producing Caribou gold district (the Caribou trend). A second anomalous area has been defined southeast of Moose River in an area underlain by the same anticlinal structure that hosts the Gold Lake, Killag and Goldenville gold districts. Atlantic Gold is very encouraged with

the results of its RAB drilling and has concluded that it is an effective means to explore for Touquoy-style gold mineralization.

In September 2005, Atlantic Gold entered into a 50:50 exploration joint venture with Acadian Gold Corporation to continue exploration along the Caribou trend of anomalies outlined by earlier exploration. The agreement amalgamates Acadian Gold's tenements immediately adjoining the historic Caribou gold district with those of Atlantic Gold along the Caribou trend. Both diamond and RAB drilling have returned encouraging results.

In addition to the joint venture with Atlantic Gold, Acadian Gold has been very active in several other gold properties in the province. It currently holds four advanced, past-producing gold districts, including Beaver Dam, Goldenville, Forest Hill, and Tangier. Collectively these four gold properties have a measured and indicated resource of 527 536 oz of gold and an inferred resource of 826 670 oz of gold. Extensive diamond drilling was conducted by Acadian Gold on its Beaver Dam property in 2006 to determine the potential for open-pit mining. Scoping studies and environmental permitting work are currently under way. The uncut measured and indicated resource for this deposit is 278 664 oz of gold with an additional uncut inferred resource of 311 151 oz of gold.

Base-Metal Exploration and Development

Acadian Gold Corporation announced on July 6, 2006, that it had completed the acquisition of 100% of the outstanding shares of ScoZinc Ltd. from HudBay Minerals Inc. for a total purchase price of $7.5 million. ScoZinc's principal assets are a modern mill facility (Scotia mine) and a zinc-lead deposit located at Gays River. The company has completed a positive feasibility study and is obtaining the necessary regulatory approvals and financing to make the transition from a development company to a producer in 2007. The current proven and probable reserves stand at 4.59 Mt grading 3.6% zinc and 1.7% lead with a measured and indicated resource of 5.24 Mt grading 4.1% zinc and 2.0% lead and a further inferred resource of 1.8 Mt grading 3.1% zinc and 1.1% lead.

Merrex Gold Inc. initiated a 4400-m diamond drill program on its Jubilee carbonate-hosted lead-zinc property at Little Narrows, Cape Breton. The property currently holds a non-compliant NI 43-101 resource of 1.56 Mt of 5.49% zinc and 1.4% lead. The thickest mineralized interval to date is 17.68 m grading 6.0% zinc and 0.98% lead. The drilling is intended to test for additional zones along the strike of the mineralized fault adjacent to those previously discovered at the property. The company has raised $5.3 million to further explore the property.

Coal Bed Methane

There is strong interest in the potential for coal bed methane in the thick coal seams of both the Stellarton and Cumberland basins of northern Nova Scotia. In the Stellarton sub-basin alone, it is estimated that approximately 500 billion cubic feet of gas resource exists down to a 1200-m depth while the Cumberland basin is estimated to contain 1 trillion cubic feet of resource between 600 m and 2400 m below surface. Here, high-volatile A to low-volatile bituminous coals have measured gas contents ranging from 100 to 510 standard cubic feet/ton. In September, Stealth Ventures Ltd. announced that it had successfully drilled a 738-m horizontal lateral in the No. 2 coal seam at its Coalmine Brook No. 12 drill site in Springhill. In early November, the company announced that it had successfully drilled its longest horizontal hole to date, intersecting 1001 m of open hole lateral in the Marker "0" coal seam. Stealth's drilling program is designed to test the productivity and commerciality of this methane resource.

Industrial Minerals Exploration

Several industrial mineral properties received attention during the year. Considerable interest continues to be expressed by companies in the Precambrian-age limestone deposits in the Creignish Hills of southwest Cape Breton Island. Geological mapping suggests that there may be thick units of calcium-rich limestone suitable for lime and cement markets. Site visits for industry representa-

tives arranged by the Department of Natural Resources and the Department of Economic Development may lead to substantial economic development in the near future.

Final Comment

Nova Scotia is blessed with a vibrant mining industry that includes several mines that have opened in recent years. In addition, there are several projects that have the potential to significantly increase the overall size of the Province's mining industry. Today, mining represents an essential but temporary land use, disrupting relatively small areas for a specific (usually short) period of time, which benefits all Nova Scotia residents. Once the ore deposit is depleted, the land is reclaimed for other community uses, including recreation. Mining represents a win-win situation for Nova Scotia.

2.4 NEW BRUNSWICK[10]

Exploration Highlights

In 2006, the exploration industry invested about $16 million searching for metallic minerals and $45 million seeking natural gas. This combined investment of $61 million represents a significant increase over the $39 million expended on exploration in 2005.

Approximately 4100 claims were staked in New Brunswick in 2006. The number of mineral claims in good standing is now 21 275, up from 19 020 in the previous year (**Figure 19**). This exploration boom has been driven largely by increases in metal prices over the last four years.

Some 30 junior mining companies are currently exploring in New Brunswick for metals, including gold, zinc, lead, copper, indium, tin, tungsten, antimony, molybdenum, titanium, and nickel. The locations of major exploration projects highlighted in this report are shown in **Figure 20**.

Gold

Freewest Resources Canada Inc. has sent a 120-kilogram (kg) representative sample of diamond drill core from the Clarence Stream Central zone to Mintek in South Africa to conduct a bench-scale mineral beneficiation test. The Central zone is the most prominent of the proximal deposits and contains an indicated resource of 347 904 t at 7.42 g/t gold (uncut), yielding 82 952 oz of gold.

Other proximal deposits at Clarence Stream contain an inferred mineral resource of 312 000 t grading 6.88 g/t gold (uncut), yielding 69 000 oz of gold. Assay results from recent diamond drilling included 40.6 g/t gold over 0.3 m from the proximal West zone, 34.5 g/t gold over 0.5 m from the proximal Cox zone, and 15.2 g/t gold over 5.0 m from the distal AD-MW zone.

Freewest has consolidated its land position in the South Oromocto Lake area of southwestern New Brunswick by optioning the Otter Lake property. Assays of 7.96 g/t gold and 5.03 g/t gold have been obtained in grab sampling during recent prospecting traverses at Otter Lake.

Freewest and Geodex Minerals Ltd. have formed a joint venture to explore the Harry Brook gold belt, 20 km northwest of Sussex in southern New Brunswick. The companies plan a program of till sampling, soil sampling, prospecting, and geophysics across their combined 161 claims in an effort to locate the bedrock source of a gold-bearing boulder found during a New Brunswick Department of Natural Resources survey.

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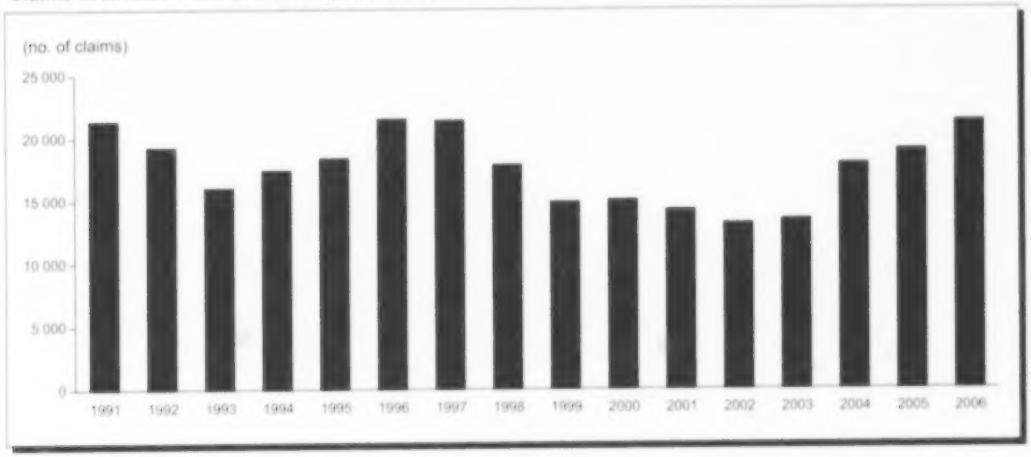
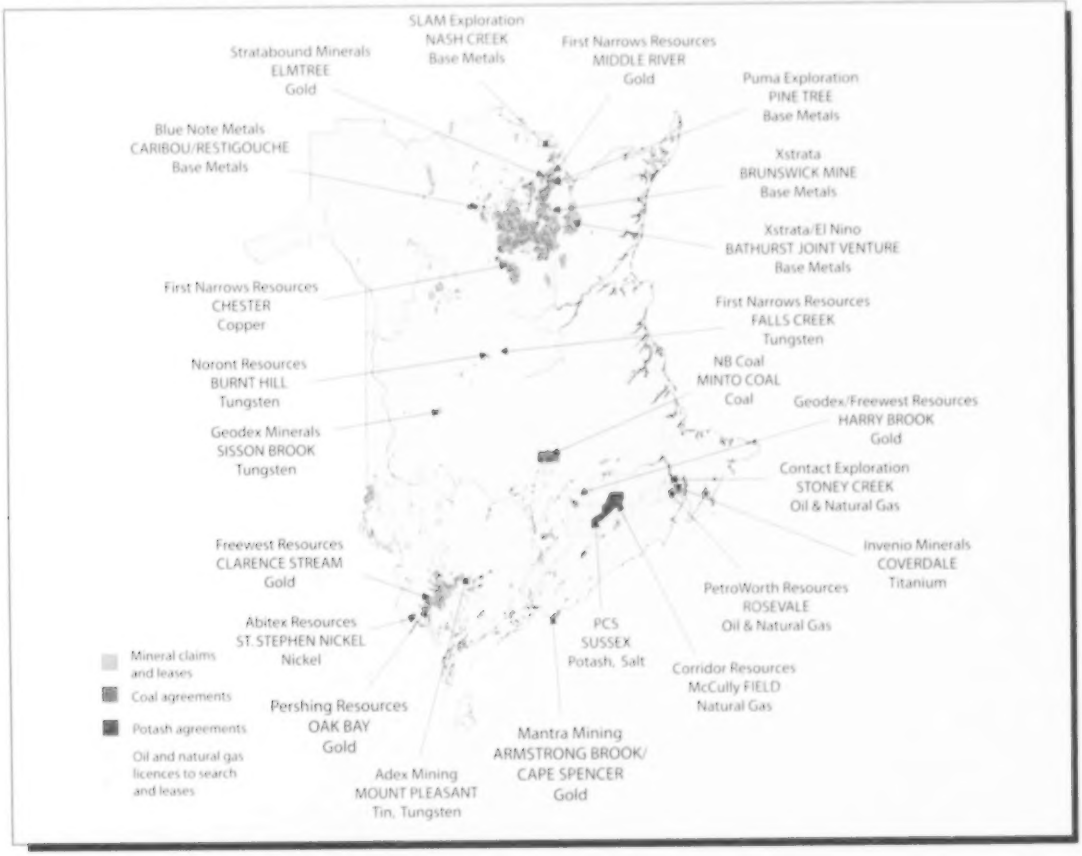
[10] The New Brunswick review of activities was compiled by Leslie R. Fyffe and Don J.J. Carroll. For more information, the reader is invited to contact Mr. Fyffe by telephone at 506-453-3874 or by e-mail at Les.Fyffe@gnb.ca.

Figure 19
Claims in Effect in New Brunswick, 1991-2006



Source: New Brunswick Department of Natural Resources.

Figure 20
Location of Selected Mineral and Hydrocarbon Properties in New Brunswick, 2006



Source: New Brunswick Department of Natural Resources.

Mantra Mining Inc. has signed an option agreement with Geodex Minerals Ltd. to earn a 75% interest in the Armstrong Brook gold property. A major drilling program is planned this year to investigate drill targets defined by Geodex.

Stratabound Minerals Corp. drilled 17 holes (1362 m) on its Elmtree gold property near Bathurst in northern New Brunswick. The drilling program found three new zones of gold and base-metal mineralization. Intersections included grades of 1.98 g/t gold, 43.1 g/t silver, 1.83% zinc, 2.29% lead, and 1.34% antimony over 9.1 m.

Stratabound Minerals recently optioned a new gold discovery made in western New Brunswick about 8 km south of Florenceville. Samples from road exposures containing disseminated arsenopyrite and pyrite assayed up to 4.09 g/t gold.

Polymetallic Minerals

Adex Mining Inc. commissioned a technical review of its Mount Pleasant tungsten-molybdenum-tin polymetallic property by Watts, Griffis and McOuat Ltd. The report summarizes work conducted on the property to verify previous resource evaluations and provides recommendations for future work that would move the property closer to production.

First Narrows Resources has optioned the Falls Creek property in central New Brunswick. Mineralized samples collected from boulders along the margin of the Dungarvon Granite returned values of 0.82% tungsten and 0.62% molybdenum.

Geodex Minerals is conducting major exploration programs in New Brunswick at Mount Pleasant West and Sisson Brook. Each project will have a budget in the range of $1 million for the 2006 field season. The company has opened a regional office in Fredericton to more effectively manage the programs.

Geodex Minerals recently signed option agreements with Union Gold Inc. and Pershing Resources Inc. involving 224 claims in southwestern New Brunswick. The claims cover the southern and western sides of the Mount Pleasant tungsten-molybdenum-tin-indium property. The optioned claims include the sites of a rock float sample with 20.3% tin collected by the New Brunswick Department of Natural Resources and drill intersections of 0.26% tin over 18 m and 0.29% tin over 6.3 m reported by Billiton Exploration Canada from an early 1980s drilling program.

Prospecting and soil/till sampling by Geodex Minerals on its Magaguadavic West grid in the Mount Pleasant area uncovered several sulphide-rich float samples (one with 56.9 ppm indium) and several high-tin samples. Prospecting is continuing on the Niles Brook, Beech Hill, Pershing, Murgor, and Union Gold options. A 75-km ground magnetic survey was conducted on the True Hill Southwest and the Pug Hole-Whopper prospects.

Geodex has previously reported an inferred resource on Zone III at the Sisson Brook property in central New Brunswick of 25.97 Mt of 0.102% WO_3 and 0.053% MoS_2. A 10 000-m fence drilling program has just been completed to define the resource on 100-m sections.

Noront Resources Ltd. has filed an independent geotechnical report on the Burnt Hill tungsten property in central New Brunswick with SEDAR.[11] The total historical resource at Burnt Hill is estimated to be 2.82 million tons grading 0.147% WO_3. The report recommends undertaking a diamond drilling program to confirm the reported mineralization.

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[11] Editor's note: The System for Electronic Document Analysis and Retrieval (SEDAR) is a filing system that was developed for Canadian Securities Administrators (CSA); it provides access to most public securities documents and information filed by public companies and investment funds with the CSA.

Base Metals

Abitex Resources Inc. has conducted bacterial metallurgical testing on the St. Stephen nickel deposit. Results are not yet available.

Invenio Minerals Inc. conducted a metallurgical sampling program on the titanium deposit at Lower Coverdale near Moncton.

First Narrows Resources Corp. completed 22 vertical diamond drill holes totaling 1365.5 m on the eastern end of the Chester deposit in the southern part of the Bathurst Mining Camp. The drill program is intended to delineate the higher-grade copper-polymetallic resource potential of the Feeder zone.

Puma Exploration Inc. has completed the first phase of exploration on the Nicholas Denys property in northern New Brunswick. The company drilled four massive-sulphide zones along a mineralized horizon over a strike length of 5.4 km. Drilling on each of the zones intercepted mineralized lenses of silver, lead and zinc containing, in places, significant gold values. The best mineralized intersections from each of these zones are as follows: Pine Tree – 90 g/t silver, 3.8% zinc, 3.8% lead, and 0.35 g/t gold over 8.0 m; Shaft – 92 g/t silver, 3.8% zinc, 3.0% lead, and 0.21 g/t gold over 6.15 m; Haché – 248 g/t silver, 2.4% zinc, 1.1% lead, and 1.10 g/t gold over 12.7 m; and Henry – 195 g/t silver, 1.8% zinc, 2.1% lead, and 1.00 g/t gold over 3.5 m.

SLAM Exploration Ltd. has completed airborne VTEM and magnetic surveys over its Nash Creek lead-zinc-silver deposit in northern New Brunswick. A 16-hole drilling program was completed on the property, for a total of 2460 m, to further define the current resource base at Nash Creek. Intersections included 6.2% zinc, 1.1% lead, and 24.1 g/t silver over 3.3 m, and 5.0% zinc, 0.7% lead, and 44.6 g/t silver over 14 m.

SLAM Exploration has optioned the newly discovered Hayden Brook showing in central New Brunswick. This showing comprises angular blocks of sulphide mineralization over a strike length of 900 m grading up to 0.5% copper, 6.2% lead, 1.8% zinc, and 96.2 g/t silver. Sulphide-breccia mineralization is associated with quartzite, iron formation, and black slate of the Tetagouche Group.

Xstrata plc, an Anglo-Swiss company, recently bought control of Falconbridge Inc., owner of the Brunswick mine near Bathurst. Xstrata Zinc and its junior partner, El Nino Ventures Inc., have entered into a joint exploration program to explore for base metals in the Bathurst Mining Camp. Falconbridge previously identified more than 100 geophysical targets in the Camp during the first three years of the continuing five-year (2003-08) program.

Xstrata and El Nino will spend $2.5 million in 2006-07 conducting further geophysical surveys and drilling programs in the search for deeply buried base-metal deposits in the Bathurst area. Approximately 24 000 m of diamond drilling comprising 34 diamond drill holes are planned for this period. Xstrata has also optioned the Willett-Noel property north of Tetagouche Falls where mineralized boulders were discovered that assayed up to 16% zinc plus lead.

Provincial Exploration Initiatives

The Minerals, Policy and Planning Division of the Department of Natural Resources has offered three programs to stimulate exploration activity: the New Brunswick Junior Mining Assistance Program (NBJMAP), the New Brunswick Comprehensive Prospector Development Program (NBPDP), and the Advanced Exploration Program in the Bathurst Mining Camp. NBPDP and NBJMAP have a total annual budget of $600 000. The Advanced Exploration Program was introduced in 2003 to stimulate exploration for deeply buried base metals in the Bathurst Mining Camp. It has a budget of $2.5 million per year over a period of five years.

New Brunswick Junior Mining Assistance Program (NBJMAP)

This program was developed as part of New Brunswick's effort to attract exploration investment into the Province. In 2006, 14 junior mining companies received grants totaling $350 000.

New Brunswick Comprehensive Prospector Development Program (NBPDP)

This program was developed to encourage "grassroots" exploration in New Brunswick. In 2006, 19 prospectors received Tier I grants for a total of $44 500, 9 prospectors received Tier II grants for a total of $37 000, and 13 prospectors received both Tier I and Tier II grants for a total of $116 500. A budget of $50 000 is used to fund prospecting courses and travel expenses for prospectors to attend the Prospectors and Developers Association of Canada (PDAC) Convention in Toronto and the Mineral Exploration Roundup in Vancouver.

Advanced Exploration Program

The Province of New Brunswick entered into a three-year agreement with Noranda Inc. (now Xstrata Zinc) in 2003 to cost-share an advanced exploration program in the Bathurst Mining Camp. The objective of this program is to identify new base-metal reserves prior to the expected closure of the Brunswick mine in a few more years. The Province of New Brunswick is contributing 50% of the funding up to a maximum of $2.5 million per year. The application of advanced exploration technology under this agreement allows the identification of potential mineralization at a much greater depth than was previously possible.

Mining Highlights

The value of mineral production from the base-metal mine near Bathurst, the potash mine near Sussex, and various peat and quarry operations across New Brunswick totaled about $875 million in 2005, up from $779 million in 2004. Metals accounted for 65% of New Brunswick's mineral production in 2005. The next largest contributor was potash, which represented about 15% of the total.

Blue Note Metals Inc. is investing $48 million in 2006-07 to re-open the Caribou and Restigouche mines in the Bathurst Mining Camp. Production is expected to begin in spring 2007 to produce 100 Mlb of zinc annually and to create 270 direct and indirect jobs in the region. Blue Note Metals reports a mineral resource of 3.81 Mt grading 3.26% lead and 7.50% zinc for the Caribou deposit and about 1.45 Mt grading 5.50% lead and 7.10% zinc for the Restigouche deposit.

Outlook

In 2007, New Brunswick should see exploration activity on par with 2006 levels. Mineral production should increase when the Caribou and Restigouche mines come into production.

2.5 QUÉBEC[12]

A Destination of Choice for Mineral Exploration

Overview

For several years, the investment climate in Québec has been very conducive to mineral exploration. On November 1, 2006, there were more than 175 000 active mining titles in Québec, the highest number in a decade. Moreover, exploration and deposit appraisal expenditures in Québec have been above $200 million in each of the past three years ($227 million in 2004, $205 million in 2005 according to preliminary data, and $234 million in 2006 according to company spending intentions).

In 2005, most of these expenditures were allocated to off-mine-site work ($180 million, 88%) managed primarily by junior companies ($111 million) and senior companies ($63 million). Exploration and deposit appraisal activities focused primarily on precious metals, mainly gold ($116 million), base metals ($53 million), diamonds ($23 million), and uranium ($4.3 million). For 2006, a similar distribution by commodity sought is expected.

In 2006, mining companies had great success in financing their exploration and deposit appraisal activities, as illustrated by the following numbers:

- 48 companies had a budget between $1 million and $5 million (including 42 junior companies);
- 6 companies had a budget between $5 million and $10 million (including 3 junior companies);
- 5 companies had a budget of more than $10 million (including 3 junior companies).

Exploration and Deposit Appraisal Highlights

Owing to high prices for metals (gold, copper, nickel, iron, uranium) and recent significant discoveries of various commodities in Québec, exploration activity was intense in the Abitibi region (gold, copper-zinc), in the James Bay area (gold, diamonds), and in the Ungava area (nickel, copper). In addition, there is growing interest in other commodities such as uranium and dimension stone.

Abitibi Region

In the Val-d'Or region, Agnico-Eagle Mines Ltd. continued construction of surface buildings, sinking of the production shaft, and underground development at the Goldex mine project, which has reserves of 21.77 Mt grading 2.4 g/t gold. Production is expected to begin in 2008 at a rate of 170 000 oz of gold per year. At the Kiena mine complex, Westdome Gold Mines Inc. started production on July 24, 2006, and expects to produce 50 000 oz of gold in 2007. Definition and exploration drilling in the VC, 388 and Martin zones continued in 2006. Alexis Minerals Corporation extracted a 15 000-t bulk sample as part of an underground exploration program at the Lac Herbin project, which has reserves totaling 1.07 Mt grading 7.3 g/t gold. A production decision is expected to be made in early 2007.

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[12] The Québec review of activities was prepared by Sylvain Lacroix, Patrick Houle, Pierre Doucet, James Moorhead, Yves Bellemare, Serge Perreault, Jocelyne Lamothe, and Rock Gaudreau. The exploration highlights were taken from the *Report on Mineral Exploration Activities in Québec 2006*. For more information, the reader is invited to contact Mr. Lacroix by telephone at 819-354-4514 (ext. 262) or by e-mail at sylvain.lacroix@mrnf.gouv.qc.ca.

Near Malartic, Richmont Mines Inc. announced in January that its East Amphi gold mine, which has measured and indicated resources of 1.39 Mt grading 5.4 g/t gold, has started production. On its Canadian Malartic property, Osisko Exploration Ltd. continued definition drilling that made it possible to calculate inferred resources of 171 Mt grading 1.2 g/t gold using a cut-off grade of 0.5 g/t gold, or 6.6 million oz of gold. East of Malartic, at its Midway project, Northern Star Mining Corporation erected a new head frame and carried out pit dewatering of the old Malartic Goldfields mine, which straddles the Cadillac tectonic zone. Very deep drilling under the old infrastructure intersected several gold-bearing areas (e.g., 9.61 g/t gold over 5.3 m).

In the Cadillac area, Agnico-Eagle Mines Ltd. announced the start of work to bring the LaRonde II mine into production. This mine represents an extension of the 20 North zone, deep beneath the existing LaRonde mine infrastructure. An internal shaft will be sunk near the existing Penna shaft. The mine is expected to begin production at a processing rate of 6000 t/d in 2011, and probable reserves of approximately 3.6 million oz of gold will sustain production for 10 years. The deposit also contains reserves of 13 million oz of silver, 62 000 t of copper and 155 000 t of zinc.

Agnico-Eagle Mines Ltd. continued development work on the Lapa gold deposit located 11 km east of the LaRonde mine. Recent drilling intersected a new extension of the Contact Centre zone. Hole LA06-77-3 yielded a 9.7-m section (true thickness) assaying 14.0 g/t gold (preliminary results). The company is planning more deep drilling directly beneath the bottom of the Lapa shaft to a depth of 1350 m. A little farther west, partners Globex Mining Enterprises Inc. and Queenston Mining Inc. obtained very good results on the Wood-Pandora property, where drilling yielded a 22.9-m section assaying 22.6 g/t gold in the new Ironwood zone north of the Cadillac tectonic zone.

In 2006, IAMGOLD Corporation (formerly Cambior Inc.) continued driving an exploration drift eastward from level 14 of the Doyon mine toward the gold mineralization discovered at the Westwood project. Exploration drilling completed beneath that drift identified a new mineralized area 1000-1500 m east of the Doyon mine between 900 and 2000 m below the surface.

Following the acquisition of the Fabie Bay and Magusi River project in early 2006, First Metals Inc. obtained the authorizations needed to dewater the ramp and open pit on the property, located northwest of Rouyn-Noranda. The company will take a bulk sample of 50 000 t of ore from the Fabie Bay deposit (672 800 t grading 2.77% copper). A bit farther west, the inferred resource of the Magusi River deposit is estimated at 1.2 Mt grading 7.1% zinc, 0.4% copper, 1.9 g/t gold and 29 g/t silver, plus 838 860 t grading 0.3% zinc, 3.3% copper, 0.2 g/t gold and 39 g/t silver.

In the spring, Alexis and Xstrata (formerly Falconbridge Ltd.) completed their estimate of mineral resources in the West Ansil deposit discovered 15 km northwest of Rouyn-Noranda. The indicated resources are 530 000 t grading 3.4% copper, 1.4 g/t gold, 9.2 g/t silver and 0.4% zinc, as well as inferred resources of 600 000 t grading 3.3% copper, 0.3 g/t gold, 5.9 g/t silver and 0.2% zinc.

Typhoon Exploration Inc. completed extensive drilling on its Fayolle property northeast of Rouyn-Noranda; one hole intersected a 4.5-m section grading 25.2 g/t gold.

James Bay Area - Southern Part

Aurizon Mines Ltd. started commercial production of the Casa Berardi mine in November 2006 with gold reserves of 1 247 000 oz. As well, several significant gold mineralizations were intersected in the 113, 118-120 and Principal zones.

Cogitore Resources Inc. published indicated resources of 561 000 t grading 10.25% zinc, 0.72% copper, 0.94% lead, 174.1 g/t silver, and 5.22 g/t gold from the surface to 585 m deep for its Estrades deposit 90 km southwest of Matagami. Cogitore began a full feasibility study to determine the mineable reserves and resources and to produce a detailed report on the capital and operating cost requirements associated with development of and mining the deposit to a depth of 415 m.

Xstrata began the development of an access ramp at the Perseverance project in Matagami with a view to starting production in the fourth quarter of 2008. Altogether, the lenses of the Perseverance project contain measured and indicated resources of 5.1 Mt grading 15.8% zinc, 1.24 % copper, 29 g/t silver and 0.38 g/t gold. Thirty-five km southeast of Matagami, Hinterland Metals Inc. discovered a new platinum-palladium zone on the surface and by drilling at the Plateau project. One drill hole yielded a combined platinum-palladium value of 1.9 g/t over 3 m.

Cancor Mines Inc. and SOQUEM INC. confirmed the historical grades of the three main known lenses of massive sulphides (A, B and B1) in the Explo-Zinc deposit on the Kistabiche property in the Joutel sector. One drill hole yielded 5.74% zinc, 0.12% copper and 16.30 g/t silver over 13.35 m (lens A), and 5.25% zinc, 0.26% copper and 17.70 g/t silver over 34.2 m (lens B1). Another drill hole produced values of 14.61% zinc, 0.34% copper and 51.5 g/t silver over 9.5 m (lens B). A feasibility study of that deposit is under way.

Sixty km south of Matagami, drilling by Société d'exploration minière Vior Inc. found new gold zones on the Douay property, one of which graded 12 g/t gold over 4 m. The Douay project contains six separate gold zones over a segment 8 km long: the West Douay zone with indicated resources of 515 000 t grading 5.94 g/t gold and inferred resources of 529 000 t grading 5.43 g/t gold, the Main zone with inferred resources of 300 000 t grading 4.8 g/t gold, zone 531 with inferred resources of 730 000 t grading 4.9 g/t gold, and three porphyric zones.

The last underground drilling program at Metanor Resources Inc.'s former Bachelor Lake mine in Desmaraisville indicated the continuity at depth of the Main and B zones. The zones were followed to a vertical depth of approximately 300 m below the last level mined. That work has now defined, under Canadian standards 43-101, resources in all categories of 1.26 Mt grading 7.37 g/t gold, for an estimated total of 300 000 oz of gold.

In the Lebel-sur-Quévillon region, Noront Resources Ltd. reported several significant gold intersections at the Windfall Lake project, including one grading 1327.9 g/t gold over 4.8 m (from 119.6 to 124.4 m). Not far from Noront's Windfall Lake project, Murgor Resources Inc. and its partner Freewest Canada Resources Inc. reported new gold intersections in zones F-17 and F-51. Breakwater Resources Ltd. resumed development of the Langlois mine in anticipation of commercial production starting again in mid-2007. The measured and indicated reserves and resources at the Langlois mine are estimated at 5 Mt grading 11.1% zinc, 0.8% copper, 54 g/t silver and 0.1 g/t gold. In the Urban-Barry Belt, Murgor Resources Inc. and its partner Freewest Canada Resources Inc. announced indicated resources of 269 000 t grading 4.10 g/t gold and inferred resources of 450 000 t grading 4.68 g/t gold in the main zone and the adjacent portions of zones 43 and 45 of the Barry Gold deposit, Barry I project.

In the Chibougamau region, Cogitore Resources Inc. discovered a new polymetallic lens at the Scott Lake project. One drill hole yielded an intersection grading 7.73% zinc, 0.88% copper, 34 g/t silver and 0.27 g/t gold over 11.76 m at a vertical depth of 600 m. Campbell Resources Inc. started access work for the ramp at the Corner Bay copper project and surface infrastructure work for development of the ramp. The Corner Bay mineral inventory includes measured resources of 181 000 t grading 5.07% copper, indicated resources of 265 000 t grading 5.93% copper, and inferred resources of 1 441 000 t grading 6.76% copper.

James Bay Area - Northern Part

The James Bay area continued to generate strong interest in gold, mainly in the Eastmain River corridor. Goldcorp Inc. thus continued definition drilling of the Roberto gold mineralization system on the Éléonore property northeast of the Opinaca Reservoir in order to test the potential of the deposit and obtain additional data for future preliminary technical and economic studies. The

Roberto system has now been defined over a lateral distance of 1.9 km and to a depth of 900 m and is still open in all directions. An initial estimate of mineral resources is expected in the first quarter of 2007.

Sirios Resources Inc. and Dios Exploration Inc. announced the discovery of a polymetallic mineralized zone on the Pontax property. A surface trench sample yielded values of 821 g/t silver, 1.31 g/t gold, 0.56% lead and 0.18% zinc over 4.36 m in pyroclastic felsic volcanic rock. As well, the Sirios-Dios consortium discovered kimberlite indicator minerals during a till sampling program on the property.

Everton Resources Inc. and its partner Azimuth Exploration Inc. carried out follow-up exploration work in the 1.7-km gold zone encompassing the Inex zone (3.03 g/t gold over 1.5 m, drill hole OP-06-03) on the Opinaca Block A property. Everton and Azimuth then defined an anomalous gold corridor running northeast for approximately 12 km through the Opinaca Block B and Wildcat 5 properties. The Claude target (1.0 g/t gold over 21.5 m) and the Manuel index (12.01 g/t gold over 4.6 m on the surface) mark the end of the corridor. D'Arianne Resources Inc. carried out definition drilling on three types of gold mineralization on its Opinaca property. Gold veins encased in sedimentary rock yielded up to 31.44 g/t gold over 2.6 m.

In the sedimentary basin of the Otish Mountains, Strateco Resources Inc. reported several uranium intersections from drilling, including grades of 3.27% U_3O_8 over 2.3 m, 1.12% U_3O_8 over 10.5 m, and 0.99% U_3O_8 over 6.6 m. These occurrences were at depths between 250 and 300 m in a vertical fault defined over a distance of approximately 7 km.

Strathmore Minerals Corporation completed a calculation of the resources on its uranium property located approximately 150 km north of Hydro-Québec's LG-4 reservoir. The inferred mineral resource was estimated at 21 424 829 tons grading 0.057% U_3O_8 (1.14 lb/ton).

North of the Otish Mountains, Ashton Mines of Canada Inc. and SOQUEM INC. began bulk sampling of a minimum 10 000 t of kimberlite-bearing material in surface trenches at Renard 4 and underground sampling via a ramp at Renard 2 and 3 on the Foxtrot property. In the fall, the partners built a dense media separation unit on site in order to start processing the tonnage extracted in late 2006. The partners expect the sample to produce at least 6000 carats (ct) of diamonds. Evaluation of these diamonds, planned for the second quarter of 2007, will advance the evaluation of the economic potential of the Renard kimberlite cluster. As well, a drilling program improved the understanding of the Lynx, North Anomaly and Hibou diamond-bearing dykes and led to the discovery of a new diamond-bearing kimberlite dyke within the boundaries of the Southeast Anomaly.

Ungava Region

The Ungava Belt continued to be the main area of interest for nickel. Canadian Royalties Inc. extended westward and increased the depth of the Ivakkak deposit, which in 2005 initially contained estimated indicated resources of 520 000 t grading 1.6% nickel, 2.1% copper and 4.4 g/t platinum group elements (PGE). Canadian Royalties Inc.'s Raglan South nickel project, which includes the Mesamax, Ivakkak, Expo and Mequillon deposits, has total indicated resources of 11 088 000 t with a weighted average grade of 1.0% nickel, 1.2% copper and 3.1 g/t PGE.

Knight Resources Ltd. reported new nickel-bearing intersections in the Century (1.56% nickel over 1.5 m), Frontier South (1.73% nickel over 3.5 m), and Frontier Central (2.06% nickel over 0.3 m) zones at its Raglan West project in the Greater Frontier region. Xstrata Nickel (Falconbridge Ltd.) continued to develop Mine 2 in order to replace the depleted deposits. In 2007, Xstrata plans to begin development of the new 5-8 zone located approximately 4-5 km east of the plant and to start the underground portion of the East Lake mine located 15 km west of Katinniq.

Azimuth Exploration Inc. and its partner Northwestern Mineral Ventures Inc. announced preliminary identification by surface prospecting of a uranium zone 3.3 km long grading up to 0.59% U_3O_8, the "Rae-1" zone, on the Rae North property located east of Ungava Bay.

Other Regions of Québec

In the Upper Laurentians, drilling in pegmatites by Nova Uranium Corporation returned grades of 0.098% U_3O_8 over 23.38 m and 0.026% U_3O_8 over 7 m. Drilling on Bornite Hill, a property owned by Quinto Technology Inc. and Ressources Appalaches Inc., revealed significant copper grades (e.g., 0.57% over 22.8 m and 1.27% over 3.8 m) and notable grades of gold (1.1 g/t over 1.2 m) and platinum (0.8 ppm over 1.06 m). Starfire Minerals Inc. conducted an aerial radiometric survey of the Capri uranium property.

Consolidated Thompson Iron Mines received the findings of its feasibility study in the spring of 2006 and began its environmental impact study in early summer. The company plans to invest $275 million to develop the Bloom Lake mine and produce 5 Mt of concentrate grading 66% iron. It hopes to begin mining the deposit in 2008. In December, Consolidated Thompson Iron Mines began negotiations with Wabush Mines on an amalgamation of operations or acquisition of the company.

In the fourth quarter of 2006, Quinto Mining Corporation (formerly Quinto Technology) completed the first phase of definition drilling on the Peppler Lake iron-bearing property south of Fermont in order to comply with Canadian standards 43-101. The Québec Cartier Mining Company worked on this iron deposit between 1955 and 1970.

In the Appalachians, drilling is under way in the Gayhurst molybdenite zone, which is 100% owned by Globex Mining Enterprises Inc. Golden Hope Mines Limited began drilling on its Bellechasse gold-bearing property. Lithic Resources Ltd. took soil samples as part of its Stoke polymetallic project.

In the dimension stone sector, the number of exploration projects was small compared with past years. Granicor Inc. conducted exploration and development work on limestone outcrops of the Deschambault Formation located near the famous Saint-Marc-des-Carrières quarries. Maurice Houle began mining an old green slate quarry north of Kingsbury; the product is used to make floor tiles and rubble stone for walls. A. Lacroix et Fils Granit Ltée acquired the mining rights to three of the six quarries owned by Granit Aurélien Tremblay Inc., which ceased exploration and mining operations in 2006.

In the industrial minerals sector, Junex Inc. completed drilling of a new brine well in Bécancour. Production testing of the brine is currently under way. In the Daniel Johnson Dam area on the North Shore, drilling by Quinto Technology Inc. on its Lac Guéret property intersected several very graphite-rich mineralized levels. The results confirm the continuity of the high-content mineralized horizon defined by exploration work in past years. Northeast of Murdochville in Gaspé, Exploration Orbite VSPA carried out characterization of aluminum-bearing red clay from its Grande-Vallée property. Exploration work is currently under way to determine the volume and tonnage.

Comparative Advantages and Recent Provincial Initiatives

Québec has one of the most favourable mineral exploration investment climates in the world. According to the results of the Fraser Institute's annual surveys of the mining industry in the past five years, Québec ranked first in Canada and was in the top five in the world in terms of investment climate, which is determined by mineral potential and government policy.

A Rich and Diverse Mineral Potential in a Vast, Open, Little-Explored Territory

Because of the richness of its subsoil, Québec ranks second in Canada in terms of mineral production value. Its mineral wealth is particularly diverse, as illustrated by the production of some 30 mineral commodities in the province. Québec also ranks as a significant producer of iron, nickel, gold, copper, zinc, niobium, ilmenite, and titanium dioxide. Discovery prospects are extremely attractive, as illustrated by the development of numerous major deposits in the past 100 years, including the Raglan and LaRonde deposits in the last decade, and the presence of many ongoing mine development and advanced exploration projects.

Québec has a land area of more than 1.5 million km^2. Over 90% of Québec consists of Precambrian rock, which is known worldwide for hosting many world-class deposits. Even after the recent wave of claim staking for diamonds, the area of more than 6 Mha covered by claims represents less than 5% of Québec's landmass; consequently, a vast area remains open to exploration. Furthermore, Québec is blessed with favourable geography and possesses a well-developed infrastructure that provides ready access to its land by road, rail, water or air.

Abundant and Accessible Geoscientific Information

In Québec, the geoscientific data acquired by government and industry for over 100 years are found in SIGEOM, the province's geomining information system. It contains no fewer than 5250 Québec Ministry of Natural Resources, Wildlife and Parks (MRNFP) publications and 64 400 reports produced by mining companies, for a total of 2.5 million pages, 325 000 geological plans and maps, 7050 mineral occurrences (metallic and nonmetallic), 131 400 diamond drill holes, and 12.5 million geochemical analysis results obtained from 636 000 samples. The information in this database is valued at over $5.5 billion and it is constantly being updated and improved. It bears noting that 90% of the pages in the database are digitized and can be viewed free of charge on the Internet.

This information is easy to access, particularly with the *SIGÉOM à la carte* interface (www.mrnf.gouv.qc.ca/mines/index.jsp). SIGEOM allows all of its mining clients to access and consult the data on the Internet from anywhere at any time, and to download, customize and order them through e-commerce.

Geoscientific Knowledge Acquisition and Processing

In 2006, Géologie Québec (MRNF) carried out a number of geological projects in various areas of Québec, including nine geoscientific inventories, ten geological studies and analyses, and several compilations and evaluations of mineral potential.

Several geological inventories were carried out under the Copper Plan, the aim of which is to foster the identification of new exploration targets and new mineral discoveries, and to supply the Horne smelter with copper concentrate. The inventories covered the Opinaca sector, which includes Virginia Gold Mines' recent Éléonore gold discovery acquired by Goldcorp, the Olga Lake discovery east of Matagami, and another sector located south of Chibougamau. A stratigraphic inventory of quaternary deposits also covered a large area west of Lebel-sur-Quévillon extending westward south of the Sleeping Giant mine.

Other inventories were carried out in the Baie-Comeau–Manicouagan sector on the North Shore at the Laurentides Wildlife Reserve, specifically to evaluate the dimension stone potential near Rivière-à-Pierre; in the Eastern Townships and in Mauricie to evaluate the dimension stone potential; and south of Chicoutimi to evaluate the mineral aggregates potential.

Several geological studies were also carried out under the Copper Plan, specifically in the sectors west of Rouyn-Noranda (Blake River West), and in the likely extension of the Ontario-based Kidd-Munro assemblage into the Malartic and Kinojevis groups in Québec. The Cadillac Fault sector

west of Rouyn-Noranda and the Urban-Barry sector were also the sites of three-dimensional geological modeling. Finally, one study covered the Schefferville sector while another targeted the muscovite potential in some areas of Québec.

Géologie Québec conducted an evaluation of the porphyry-copper mineral deposit potential of the Abitibi-Témiscamingue region and the southern part of northern Québec. All of the data and maps were released to the public in November at the 2006 Québec Exploration conference. Géologie Québec also conducted an evaluation of gold potential by processing georeferenced data on the James Bay region.

The initial results of all of these studies were released in November at the 2006 Québec Exploration conference, which was attended by some 1500 representatives of the exploration sector from all regions of Canada and other parts of the world.

To open northern Québec up to mining exploration, the Géologie Québec branch of the MRNF conducted, between 1995 and 2003, two of the most extensive geological mapping programs in Canada. Under the Moyen-Nord and Grand-Nord programs, 80 new geological maps (at scales of 1:50 000 or 1:250 000) covering an area of close to 400 000 km^2 were produced. The data collected during the Grand-Nord program continue to be the subject of analyses covering different themes. Other analyses are under way in northwestern Québec and in the Grenville Province.

A Reliable, Modern Mining Regime

The Québec mining regime is based on the *Mining Act* and is founded on the principle of free mining, i.e., universal access to the resource. Mining titles are now being obtained from map designations, according to predefined boundaries. Titles, together with exclusive rights to search for all state-owned mineral commodities (with the exception of sand, gravel, clay, and other surface deposits) and a guarantee to receive a mining title in the case of a discovery, are awarded on a first-come, first-served basis. This approach has the advantage of being fast and simple; it also makes the claim indisputable by a third party and protects investments in the claim.

The average cost of acquiring a new designated claim of an average area of 50 ha is $80. This is a real financial boon to explorationists since the former costs required for staking out and registering a similar area amounted to over $500. Consequently, the acquisition of claims in Québec via map designation is, on average, close to seven times less expensive for the industry compared to the old method of ground staking.

The electronic register of mining titles was replaced in 2006 with a new interactive, transactional, Web-based mining title management interface called GESTIM Plus. GESTIM Plus provides free, instant access 24 hours a day to the public register of real and immovable mining rights in Québec. It allows users to consult the register and to download maps and data. Users can designate properties and use the Department's e-commerce system to pay fees. Member services allow clients to consult previous transactions and to check the status of their current applications. The member services tools allow clients to independently manage their mining exploration titles. GESTIM Plus is available on the Internet at https://gestim.mines.gouv.qc.ca.

One of the Lowest Net Exploration Costs in the World

Québec offers several tax incentives that significantly reduce the net cost of exploration for mining companies in Québec and promote the financing of their activities (www.mrnf.gouv.qc.ca/mines/fiscalite/index.jsp).

Under the *Taxation Act*, the Québec government introduced the tax credit for resources (CIRR) in 2001. This mechanism provides direct assistance to mining companies that incur eligible explo-

ration expenses in Québec, unlike the flow-through-share regime in which companies give up the right to deduct eligible expenses to an investor. Part of this tax credit is refundable and part is non-refundable.

With respect to the refundable portion, eligible exploration costs incurred after March 30, 2004, may give rise to an entitlement of 35% of the costs incurred by companies that are not mining a mineral resource, or 15% of the costs incurred by companies engaged in mining activities. These rates are higher (38.75% and 18.75%, respectively) for costs incurred in Québec's Near North or Far North.

In addition to the refundable portion, a non-refundable portion can be applied, where applicable, to reduce the income tax and capital tax that a company must pay in Québec. The rate for the non-refundable portion can amount to a maximum of 10% of the eligible costs incurred by companies that are not producing (a mineral resource) and 30% of the costs incurred by producing companies. These rates are lower (6.25% and 26.25%, respectively) for costs incurred in Québec's Near North or Far North.

Eligible companies must be active and have a place of business in Québec. The eligible expenditures for the purpose of calculating the tax credit are those that give rise to an entitlement to a deduction of at least 125% under the current flow-through-share regime. This credit is taxable under the *Taxation Act*, the *Mining Duties Act*, and the federal *Income Tax Act*. Companies have the option of using this credit or the flow-through-share financing program.

In addition, the credit on duties refundable for losses provided under the *Mining Duties Act* is equal to 12% of the lesser of two amounts: the annual loss, or the exploration, deposit appraisal and mine development expenses. The credit is increased to 15% if the exploration expenses have been incurred in Québec's Near North and Far North and the tax credit for resources has not been claimed for the expenses. The credit on duties refundable for losses is non-taxable and does not reduce the amount of exploration expenses that a mining company can claim under the *Mining Duties Act* and the *Taxation Act*. Since 2003, however, it is taxable under the federal *Income Tax Act*.

An additional deduction of 50% of qualifying exploration expenses may also be granted under the *Mining Duties Act*, up to a limit of 50% of annual profit. Eligible expenses include surface exploration and underground drilling work performed on land that is not under a mining lease or mining concession, or where no extraction work has been carried out in the previous five fiscal years.

Access to Public Funding, Venture Capital, and Exploration Partners

The Québec *Taxation Act* enables a Québec taxpayer (individual) to claim a substantial tax deduction for his or her investment in flow-through shares. The Québec regime allows for a base deduction equal to 100% of the cost of flow-through shares. For shares acquired since March 31, 2004, individuals may deduct an additional 25% when the exploration costs are incurred in Québec by a company not engaged in the mining of mineral resources. A further 25% may be deducted if the exploration is done from the surface, bringing the total deduction to 150% of the cost of the investment.

Another amendment with respect to flow-through shares has been in force since March 31, 2004. Upon the sale of shares, an investor may benefit from an exemption on the capital gain realized on the portion of the sale price between the cost of acquiring the shares and their adjusted cost base, which is deemed to be zero.

For the 2006 taxation year, taking Québec and federal tax benefits into account, the net cost of a $1000 investment in flow-through shares totals some $284 for a Québec individual at the highest marginal tax rate.

Several venture capital funds are dedicated to companies involved in mineral exploration in Québec. The mission of SIDEX (Société d'investissement dans la diversification de l'exploration [exploration diversification investment corporation], see www.sidex.ca), is to invest in the capital stock of companies with exploration projects that will lead to the diversification of the Québec mining industry, both in terms of commodities extracted and in terms of mineral-producing regions. The initial capital for SIDEX was set at $50 million and was provided by its two limited partners, the Québec government (70%) and the Solidarity Fund QFL (30%). In 2006, SIDEX made seven investments totaling $2.2 million.

In addition to contributing to SIDEX, the Solidarity Fund QFL (www.fondsftq.com) invests in mining exploration and production companies, primarily through regional funds. The QFL's northern Québec regional solidarity fund announced investments of $1 million in seven exploration companies, while its Abitibi-Témiscamingue fund announced an investment of $600 000 in one mining company.

SODÉMEX (Société de développement des entreprises minières et d'exploration [mining and exploration company development corporation]) and SODÉMEX II are limited partnerships held by Capital d'Amérique CDPQ and SGF Minéral Inc. They participate in the development of the mining industry in Québec by investing in junior exploration companies and mining producers with activities in Québec whose market capitalization is below $125 million. These companies are also active on the secondary market. The investment portfolio of these companies is managed by Gestion SODÉMEX.

The Société de développement de la Baie-James (SDBJ) (James Bay Development Corporation) has set up an investment fund that can invest between $100 000 and $500 000 in mining exploration in the James Bay region (www.sdbj.gouv.qc.ca). In 2006, the fund announced investments in four exploration projects totaling $700 000.

In the March 17, 2006, Budget Speech, the Minister of Finance announced that the head office of SOQUEM (Société québécoise d'exploration minière [Québec Mining Exploration Corporation], a subsidiary of SGF Minéral Inc.) would be relocating from Québec City to Val-d'Or. SOQUEM's mandate still covers the entire province, but the move is intended to put the corporation closer to where the bulk of exploration activity takes place and to create synergy with other players in the industry. The government also allocated $3 million a year over three years for SOQUEM's exploration projects. This amount does not include recent expenditures related to diamond exploration by the partnership of Ashton Mines of Canada and DIAQUEM (formerly linked to SOQUEM INC.) on their Renard property north of the Otish Mountains.

Finally, the Québec Ministry of Natural Resources and Wildlife continued to encourage Aboriginal communities in the Near North and Far North to participate in the development of the mineral potential of this vast area. To that end, a budget of $300 000 was granted in 2005-06 to each of the following three Aboriginal mining funds: the Cree Mineral Exploration Board, the Fonds d'exploration minière du Nunavik (Nunavik mining exploration fund), and the Fonds minier Innu Nitassinan (Nitassinan Innu mining fund).

2.6 ONTARIO[13]

Exploration and Development Highlights

Overview

Ontario's renowned geology, combined with the provincial government's ongoing work to provide geoscience information and to maintain favourable taxation policies and a stable regulatory environment, are helping the province maintain its standing as Canada's top mineral investment jurisdiction, and among the top 10 worldwide.

Higher metal prices are reflected in the soaring values for mineral production and the continuing increases in spending on exploration in Ontario. Ontario's diverse geology accounts for the broad spectrum of minerals being sought and produced. Although gold remains the primary focus, higher prices for other metals are leading to an increase in spending for minerals such as uranium, molybdenum and silver.

Ontario will lead all Canadian provinces and territories in exploration and deposit appraisal expenditures with $345 million in spending in 2006 (**Figure 21**). Most of the increase in 2006 is attributable to more spending at the deposit appraisal phase. Final exploration and deposit appraisal expenditures for 2005 totaled $294 million, down slightly from $307 million in 2004. Spending by junior companies has tripled from $50 million in 2002 to over $150 million in 2006, and now accounts for 45% of expenditures, up significantly from 35% in 2002.

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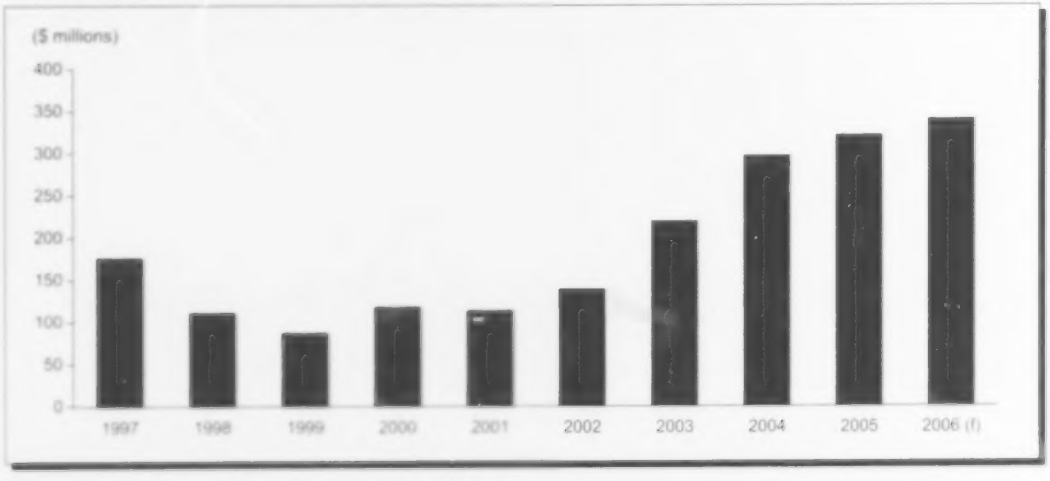
[13] The Ontario review of activities was prepared by staff of the Ministry of Northern Development and Mines. For more information, the reader is invited to contact Brock Greenwell by telephone at 705-670-5896 or by e-mail at brock.greenwell@ontario.ca.

Figure 21
Exploration Expenditures in Ontario, 1997-2006



Source: Ontario Ministry of Northern Development and Mines.
(f) Forecast.

The number of mining claim units in good standing in Ontario reached a new record in 2006 of 229 000 from 213 000 in 2005. The value of assessment work in Ontario climbed to $88 million in 2006 from $68 million in 2005.

Ontario retained its position as the lead Canadian province in the value of non-fuel mineral production, as the value of production soared to $9.4 billion in 2006 from $7.4 billion in 2005. Preliminary estimates for 2006 indicate that the total value of Ontario's mineral production in the two commodity groups (metals and nonmetals), which comprise the industry total, was $9.4 billion, a $2 billion increase from 2005. Another rise in the value of nickel production and dramatic increases in the value of copper and zinc are responsible for much of the increase. **Figure 22** shows Ontario's active mines in 2006.

Ontario is the third leading producer of platinum group metals (PGM) in the world behind Russia and South Africa. PGM are produced as a by-product from nickel mining in the Sudbury area and primary production takes place in northwestern Ontario at the Lac des Iles mine owned by North American Palladium Ltd. Lac des Iles is Canada's only PGM mine. These rich deposits have attracted the attention of exploration companies, which have increased their spending on exploring for PGM. Spending on exploration for PGM in Ontario has climbed from $2 million in 1998 to $24 million in 2005 as activity intensifies at some of the larger projects across the province and the price of platinum moves above US$1000/oz. In the Sudbury area, URSA Major Minerals Incorporated is close to making a production decision on its Shakespeare property. Lonmin Plc, the world's third largest PGM producer, is working with Wallbridge Mining Company Limited and CVRD Inco Limited on 13 properties in the Sudbury area, including Wallbridge's Broken Hammer zone. Drilling by Marathon PGM Corporation at its Marathon project has led to an increase in resources to 2.75 million oz (Moz) of PGM. Extensive drilling by North American Palladium near the Lac des Iles mine continues to expand reserves at this mine near Thunder Bay. Farther west, near Fort Frances, the high grades found at the North Rock copper-nickel-PGM property of MetalCORP Limited have caught the attention of some senior mining companies. These PGM-rich properties are spread across northern Ontario from Sudbury to Fort Frances.

Platinum Group Metals

Marathon PGM Corporation is developing a property located near Marathon and recently announced a resource (measured and indicated) of 68.3 Mt grading 0.91 g/t palladium, 0.25 g/t platinum, 0.09 g/t gold and 0.32% copper. This translates into 1 986 000 oz of palladium, 551 000 oz of platinum, 210 000 oz of gold, and 493 Mlb of copper. Consultations with the town of Marathon and local First Nation communities are ongoing. A 35 000-m diamond drilling program commenced in January 2007.

Wallbridge Mining Company Limited is actively exploring several of its interests in 34 exploration properties covering in excess of 650 km^2 of footwall rocks to the Sudbury Igneous Complex. The Broken Hammer zone project in the North Range received much attention in 2006. At surface, the Broken Hammer zone project is a network of platinum group elements (PGE)-rich copper veins within a larger disseminated sulphide envelope. Drilling has intersected high-grade PGE values over significant widths, such as a 20.53-m interval in hole WIS-028 averaging 13.72 g (0.4 oz) total precious metals (TPM) per tonne. The total inferred mineral resource as estimated to NI-43-101 standards is 251 000 t at a grade of 3.80 g/t TPM (1.56 g/t palladium, 1.62 g/t platinum, and 0.61 g/t gold), 1.00% copper, and 0.10% nickel.

URSA Major Minerals Incorporated has brought the Shakespeare nickel-copper-PGM project 50 km west of Sudbury closer to production. After two years and $6.5 million in expenditures, a feasibility study has defined a diluted probable reserve of 11 266 000 t grading 0.33% nickel, 0.35% copper, 0.02% cobalt, 0.33 g/t platinum, 0.37 g/t palladium, and 0.9 g/t precious metals. URSA Major is

currently advancing the property toward a production decision and has submitted applications for the permitting of two open pits, a mill to process up to 4500 tonnes per day (t/d), and a co-disposal waste management facility and related site infrastructure.

MetalCORP Ltd.'s diamond drill program on the East zone of the North Rock property intersected a 3.7-m zone that returned 12.2 g/t platinum. Two intervals within this 3.7-m zone returned 22.4 and 46.1 g/t platinum. Overburden removal, channel-cut sampling and diamond drilling will test this zone.

Pacific North West Capital Corp. has been exploring its River Valley project east of Sudbury in Dana and Pardo townships for over four years. More than 100 km of drill core has been extracted along the northern brecciated contact of a gabbroic intrusion with a potential contact zone some 15 km in length. Over $19 million has been spent to date, with another $1.1 million dedicated to Phase 9A drilling currently in progress. In early 2006, the resource was given as: measured and indicated resources of 30.5 Mt containing 953 900 oz of palladium, 329 500 oz of platinum and 59 500 oz of gold, with an additional 2.3 Mt of inferred resources containing 67 000 oz of palladium (0.87 g/t), 23 800 oz of platinum (0.31 g/t) and 4000 oz of gold (0.05 g/t) using a 0.7-g/t platinum plus palladium cut-off.

Gold

Southern Star Resources and Exall Resources were rewarded for their intensive drill program this year on their Gold Eagle mine property with several high-grade gold intersections in the Bruce Channel zone of up to 107.7 g/t gold over 3.8 m. The mineralized envelope of the zone has also expanded to 1100 m vertical, 450 m northwest-southeast and 615 m northeast-southwest. Having spent a total of $3.8 million in 2005, the 50:50 partners have budgeted a total of $8.7 million for drilling in 2006 and $11.4 million in 2007.

Due to the significantly expanded Red Lake land package (41 000 ha) that came with its buyout of Placer Dome's Campbell mine and associated mineral properties, the world's richest gold producer, Goldcorp Canada Ltd., will spend approximately $9 million on surface exploration within the Red Lake greenstone belt in 2007. To attain its goal of producing 1 Moz of gold in 2010, Goldcorp will invest $23 million in underground exploration and development at its Campbell and Red Lake mine complexes in 2007.

Richmont Mines Inc. completed its first gold pour at the Island Gold property near Wawa in mid-November. It yielded one gold doré bar of an approximate gross weight of 530 oz. Processing of the mineralized material from the underground development and test mining continue. The deposit contains a measured and indicated resource of approximately 190 000 oz and an additional inferred resource of approximately 65 000 oz.

Effective January 2007, Pelangio Mines Inc. has entered into a purchase agreement with a newly formed company (Detour Gold Corporation) to move the Detour Lake property through the development stage. The M zone gold deposit contains an indicated resource of 804 000 oz and an inferred mineral resource of 1.4 Moz. The adjacent Detour mine property hosts an indicated resource of 1.4 Moz and an inferred resource of 2.0 Moz.

Lake Shore Gold Corp. released a new indicated resource estimate for its Timmins West property. The property contains 1.29 Moz of gold (uncut), as well as an inferred resource estimate of 207 000 oz of gold (uncut). Lake Shore Gold plans to complete a pre-feasibility study and obtain an advanced underground exploration permit in 2007. The company also announced that it has purchased the Bell Creek mill and associated infrastructure to reduce future development cost estimates and provide new options for processing mineral products from gold projects.

Figure 22
Ontario Mining Operations, 2006

Figure 22 (cont'd)

GOLD MINES

1.	Clavos	St. Andrews Goldfields Ltd.
2.	David Bell	Teck Cominco Limited, Barrick Gold Corporation
3.	Dome	Porcupine Joint Venture – Goldcorp Inc., Kinross Gold Corporation
4.	Eagle River	Wesdome Gold Mines Ltd.
5.	Hoyle Pond	Porcupine Joint Venture – Goldcorp Inc., Kinross Gold Corporation
6.	Macassa	Kirkland Lake Gold Corporation
7.	Musselwhite	Goldcorp Inc., Kinross Gold Corporation
8.	Pamour	Porcupine Joint Venture – Goldcorp Inc., Kinross Gold Corporation
9.	Red Lake	Goldcorp Inc.
10.	Williams	Goldcorp Inc. Teck Cominco Limited, Barrick Gold Corporation

BASE-METAL MINES

11.	Kidd Creek (copper, zinc)	Xstrata Plc
12.	Lockerby	First Nickel Inc.
13.	McCreedy West	FNX Mining Company Ltd.
14.	Montcalm	Xstrata Plc
15.	Redstone	Liberty Mines Inc
16.	Sudbury Operations: Copper Cliff North Copper Cliff South Creighton Garson Gertrude McCreedy East/Coleman Stobie	CVRD Inco Limited
17.	Sudbury Operations: Fraser Onaping/Craig Lindsley	Xstrata Plc

PLATINUM GROUP METAL MINES

18.	Lac des Iles	North American Palladium Ltd.

OTHER METAL MINES (MAGNESIUM, CALCIUM, STRONTIUM)

19.	Timminco Metals	Timminco Ltd.

MAJOR INDUSTRIAL MINERAL OPERATIONS

1.	AMP Quarry (carbonatite)	Agricultural Mineral Prospectors Inc.
2.	Badgeley Island Quarry (silica)	Unimin Canada Ltd.
3.	Blue Mountain Operations (nepheline syenite)	Unimin Canada Ltd.
4.	Cavendish Twp. Mine (vermiculite)	Regis Resources Inc./Vermiculite Canada
5.	Goderich Brine Field (salt)	Sifto Canada Inc.
6.	Goderich Mine (salt)	Sifto Canada Inc.
7.	Hagersville Mine (gypsum)	CGC Ltd.
8.	Henderson Mine (talc)	Dynatec Minerals Division – Canada Talc Division
9.	Kapuskasing Phosphate Operations (phosphate)	Agrium Inc.
10.	North Williams Mine (barite)	Extender Minerals of Canada Ltd.
11.	Ojibway Mine (salt)	The Canadian Salt Company Limited
12.	Penhorwood Mine (talc)	Rio Tinto Minerals Group
13.	Tatlock Quarry (calcium carbonate)	OMYA (Canada) Inc.
14.	Windsor Brine Field (salt)	The Canadian Salt Company

Source: Ontario Ministry of Northern Development and Mines.

Northgate Minerals Corporation acquired Matachewan properties, including the former Young Davidson and Matachewan Consolidated properties. The company completed an 18 000-m diamond drilling program and committed to a $22 million two-year underground exploration program.

Queenston Mining Inc. discovered several high-grade gold and copper-gold mineralized zones north of, south of, and below the Upper Beaver mine workings 20 km east of Kirkland Lake in Gauthier Township. The company is assessing drilling requirements for NI-43-101-compliant resource determinations.

Rainy River Resources Ltd. continued the diamond drill program targeting the area above the 300-m level on the down-plunge extension of the 17 zone. A mineral resources estimate based on diamond drill results is pending. Diamond drilling continues on the property targeting the gold potential along the 17 gold trend. Significant diamond drill intersections from the "new" ODM zone include 10.60 g/t gold over 23.5 m, 17.02 g/t gold over 22.6 m, 18.68 g/t gold over 13.5 m, and 81.52 g/t gold over 9 m. Several of these intervals contain visible gold.

Kodiak Exploration Limited discovered two significant gold-bearing zones on its Hercules property, northeast of Beardmore. Phase 1 drilling on the Wilkinson Lake gold zone returned 15.59 g/t gold over 16.60 m. Stripping of overburden along the newly discovered Penelton and Yellow Brick Road zones has exposed a series of large gold-bearing quartz veins and stockwork zones.

Opawica Explorations Inc. has optioned three gold prospects in southeastern Ontario: the Mono and Bannockburn property has a historic geologic reserve of 248 160 tons at 9.15 g/t gold; the Addington gold property where past operators reported an inferred mineral resource of 720 900 tons at 4.5 g/t gold; and the Dingman property, which has a historic measured and indicated resource of 12 600 000 tons of 0.70 g/t gold.

Brett Resources Inc. is continuing to explore the Hammond Reef property. Widespread gold mineralization on the property is localized in a 100- to 300-m-wide northeast-trending band of altered granitoid rocks within and adjacent to a persistent strongly foliated schist fault zone. Recent drilling results include Hole BR-1 intersecting 38.5 m of 0.81 g/t gold, whereas Hole BR-2 intersected 43.5 m of 1.22 g/t gold. Brett Resources Inc. can acquire a 60% interest in the property from Kinross Gold by spending $5 million in the next few years.

In partnership with world-class mining company Goldcorp Inc., Premier Gold Mines Limited is aggressively exploring the Rahill-Bonanza property, where previous drill results include 13.27 g/t gold over 19.0 m and 8.66 g/t gold over 22.0 m from the Bonanza and North Contact zone discoveries, respectively. The property is interpreted to host mineralized structures from both the Gold Eagle mine property of Southern Star Resources-Exall Resources to the west and from Goldcorp's Red Lake gold mines located immediately to the east.

With the acquisition of certain Placer Dome operations in 2006, the Porcupine Joint Venture now comprises the Timmins assets of Kinross Gold Corporation and Goldcorp Inc. Underground exploration drilling at the Hoyle Pond mine has successfully defined new resources at the Pamour mine that will provide an alternate source of higher-grade ore at the open pit. Exploration drilling at the Hollinger property has been accelerated with five surface diamond drills operating.

West Timmins Mining Inc. initiated a three-dimensional (3D) and structural modelling exercise on the 4800 zone on the Thorne property. This zone occurs within the Golden River deformation zone and hosts an inferred geological resource of 20 139 t grading 18.00 g/t gold to a vertical depth of less than 100 m. Drilling will test the down-plunge continuity of the high-grade gold mineralization.

Wesdome Gold Mines Ltd. released results from its underground exploration program of the 811 zone at the Eagle River mine. Significant assays include intersections of 80.77 g/t gold over 2.76 m and 36.49 g/t gold over 4.56 m, including 53.72 g/t gold over 2.44 m. A ramp is advancing towards

the 811 zone and is currently 120 m away. Drifting on the zone at a depth of 415 m will establish continuity and define its western limits.

Kirkland Lake Gold Inc. discovered at least 14 new gold-bearing zones south of the Macassa mine workings. These discoveries are now the main focus of exploration and a cross cut is being driven from the 5300 level to access the zones and conduct close-up exploration. Recently, the company reported a spectacular intersection of 50 feet (ft) grading 5.57 oz/ton gold.

St Andrew Goldfields Ltd. acquired the Holloway–Holt-McDermott gold mining and exploration assets from Newmont Canada Limited. The reserves in all categories are approximately 1.23 Moz of gold. The company commenced a 3300-m underground decline ramp to access the Taylor Shaft, Upper Porphyry and West Porphyry zones in Taylor Township and commenced with preparation for open-pit mining at the Hislop mine in Hislop Township. The company's projects are all located in the Matheson area.

Houston Lake Mining Inc. continued exploration on the West Cedartree gold property. A 1012-t sample from the Angel Hill gold zone returned an average grade of 5.67 g/t gold. Additional exploration and diamond drilling are planned. Houston Lake Mining has also applied for an advanced exploration permit to remove a 50 000-t sample.

Initial stripping by Freewest Resources Canada Inc. exposed a mineralized corridor known as the Main zone over a 2000-m strike length on the Larose property. It consists of a series of discrete northeast-trending shear zones containing multi-ounce gold grades along its strike length. The Main zone consists of the J&R, Larose, P, Snoopy, Porphyry, and Northwest View occurrences that have yielded best values of 8.80, 64.87, 371.94, 10.15, 3.87 and 62.93 g/t gold, respectively, in selected grab samples. The best drill intercepts comprised shallow cuts of the mineralized structure at depths of less than 30 vertical metres and returned values of 8.74 g/t gold over 2.0 m and 3.45 g/t gold over 2.8 m. Recent diamond drilling tested an 800-m segment of the Main zone's total 2000-m strike length in the vicinity of the trenches.

Base Metals

Liberty Mines Inc. commenced production at the Redstone mine in May 2006. The ore is custom milled while the construction of a new nickel concentrator at the mine site is under way. Underground drilling at the mine is under way in order to calculate an NI-43-101 reserve to the 460-m level.

Golden Chalice Resources Inc. is following up on the Lavigne zone in Shillington Township approximately 20 km south of Matachewan. This zone is a brecciated stockwork with patches of semi-massive chalcopyrite hosted within hematitic and potassic altered arenites overlying the Round Lake batholith. Intersections of up to 1.5% copper over 10 m and 2.0% copper over 6.0 m were reported in 2005.

FNX Mining Company Inc. has achieved notable results from exploration of its footwall properties in the Levack Complex near Sudbury. Sample drill intercepts include 10.2 ft assaying 26.2% copper, 3.0% nickel, and 14.5 g/t platinum, plus palladium plus gold, and 16.4 ft assaying 26.2% copper, 3.7% nickel, and 15.4 g/t platinum, plus palladium plus gold. Exploration drilling from surface and from underground platforms in the neighbouring Craig mine of Xstrata Nickel is under way to delineate a suspected continuous polymetallic mineralized system extending some 2300 ft along plunge.

Further base- and precious-metal intersections are being obtained by Tribute Minerals Inc. on its Arrow zone, where the company is considering an underground bulk sampling and definition drilling program. An indicated resource estimate of 1.3 Mt at 8.12% zinc, 0.81% copper, 0.64 g/t gold and 22.9 g/t silver is defined within a polymetallic volcanogenic massive sulphide (VMS) environment. Appreciable indium and gallium grades of the deposit may enhance the project's overall economics.

Landore Resources Limited drilled 11 937 m on the VW zones, the B4-7 deposit, and other nickel targets on the Junior Lake properties east of Armstrong. Drilling confirmed the continuity of the VW zones over 350 m in length and up to 200 m in depth, with consistent results in excess of 1% nickel. Landore will carry out an estimate of the mineral resources of the VW zone, documented in an NI-43-101-compliant report.

Richview Resources Inc. received permits and approvals required to proceed with dewatering of the Thierry mine near Pickle Lake. Plans call for mine dewatering, underground ore definition drilling, metallurgical studies, and a feasibility study. A measured and indicated resource estimate of 4 623 000 t grading 1.71% copper and 0.20% nickel was announced.

Sage Gold Inc. conducted stripping, trenching, metallurgical studies and a 3000-m drilling program on its Onaman property, northeast of Beardmore. The first hole drilled on the Lynx #1 zone intersected 5.83% copper, 141 g/t silver and 1.7 g/t gold over an approximate true width of 6 m. A resource estimate of 70 000 tons grading 3.6% copper, 2.4 g/t gold and 9.9 g/t silver had been reported in 1980.

In August 2006, Vault Minerals Inc. completed an in-fill mapping, rock sampling, and MMI (mobile metal ion) soil sampling program on its Percy Lake VMS property in Moggy Township, northwest of Sault Ste. Marie. The property covers a prominent, well-defined, 7-km^2 zinc-cadmium-copper anomaly in lake sediments. Vault followed up with a 1500-m drill program at the Percy Lake property during December 2006 and recently doubled its land position through ground staking.

Xstrata Nickel recently announced that it intends to continue its growth strategy in the Sudbury area after the acquisition of Falconbridge Ltd. The company views the Nickel Rim nickel project as an important part of the mix for its growth. The Nickel Rim project has an inferred resource of 13.4 Mt of mostly nickel, copper, platinum and palladium, and should begin annual production of 1.25 Mt of ore in 2010. Development and exploration work continues at the Fraser-Morgan property and other Sudbury area mine properties.

CVRD Inco's takeover of Inco Limited in the fall of 2006 should not lead to major changes in the way the company operates as Inco continues to report record profits. The Creighton mine, in operation since 1901, has produced 155 Mt with an average grade of 1.59% nickel and 1.23% copper. Diamond drilling in three holes from the 2380-m level to the 3050-m level has intersected a zone of mineralization interpreted to be an extension of the known inferred mineral resource associated with the 400 orebody and could represent a potential mineral deposit 150 m along strike and 250 m down-dip. CVRD Inco budgeted $19 million for exploration in the Sudbury region for 2006, which includes projects such as Totten and Victor.

At the Jefferson deposit, Vencan Gold Corporation completed 12 diamond drill holes. Significant assays included 7.24% zinc over 1.85 m, and 2.34% zinc and 2.10% lead over 8.7 m. Vencan also discovered a new zinc showing located 2 km to the west of the Jefferson deposit. Grab samples from this occurrence returned assays ranging from 11.20% to 17.96% zinc.

At the Langmuir No. 1 mine, Inspiration Mining Corporation is conducting an in-fill definition drilling program to investigate the nickel-bearing mineralization below the 300-ft level at the past-producing mine. Inspiration is also exploring the nearby Langmuir No. 2 North zone property. Langmuir No. 2 was in production from 1972 to 1978 and yielded 1.1 million tons grading 1.43% nickel.

URSA Major Minerals Incorporated announced a positive preliminary economic assessment at the company's Shining Tree nickel-copper deposit in Fawcett Township. The deposit contains an in-pit diluted resource of approximately 398 000 t at a grade of 0.68% nickel, 0.33% copper, and 1.5 g/t precious metals.

In 2006, Amador Gold Corp. acquired a 100% interest in the East Breccia property located approximately 65 km north of Sault Ste. Marie in Nicolet Township. The property hosts the East Breccia, and half of the West Breccia that, along with the South and Breton Breccias, were formerly owned by the Tribag Mining Company. Between 1967 and 1974, the Tribag Mining Company produced about 1.25 Mt of ore averaging in a range of 2% copper from the Breton Breccia and part of the West Breccia. The East Breccia is the largest and has never been mined. Amador plans to complete compilation of existing data for the East and West Breccias followed by drilling and trenching to assess the tonnage and grade potential.

Freewest Resources Canada Inc.'s SunGold Wye Lake VMS property in the western Shebandowan Belt comprises replacement-style copper-zinc massive sulphide mineralization and associated stringer-type copper mineralization traced over a 1-km strike length. Although relatively narrow, the occurrence is of exceptional quality, yielding surface values of up to 12.40% copper and 32.80% zinc with drill results including 21.10% zinc over 1.0 m.

The Hamlin Lake property and the Deaty's Creek property of East West Resources is situated on strike with the SunGold stratigraphy. The copper-gold-molybdenum property is hosted by extensive felsic volcanic breccias almost 200 m thick. Surface stripping and diamond drilling have established that the zone has a strike length of several kilometres. The properties have some characteristics of an iron oxide-copper-gold (IOCG) deposit.

Diamonds

De Beers Canada Inc. commenced construction on the Victor Diamond mine in mid-2006. Located in the James Bay Lowland, the open-pit mine is expected to open in 2008 and will create 375 full-time jobs during operation. The mine is expected to produce about 600 000 ct annually with an estimated value of US$420/ct. De Beers continues to investigate the economics of other kimberlites in the vicinity of the Victor pipe.

Metalex Ventures Ltd. continues to bulk sample the T1 kimberlite, located approximately 80 km west of the Victor diamond project. A total of 896 diamonds were recovered from 1992 kg of kimberlite, yielding an average diamond count of 420 diamonds per 100 kg. To date, 88 t of a planned 200-t mini-bulk sample have been collected.

Metalex Ventures Ltd. announced the discovery of a new kimberlite on its T1 project. Located between the T1 kimberlite and the Victor diamond project, drilling intersected kimberlite at a depth of approximately 10 m. Approximately 100 kg of kimberlite were collected for diamond extraction and analysis of indicator minerals.

Dianor Resources Inc. completed a 40-000-m diamond drilling program on its Wawa area diamond property. Results of the program indicate diamond continuity through the Archean conglomerate both laterally and at depth. The majority of the stones recovered to date are of commercial size. The largest stone recovered from outcrop samples weighed 0.667 ct.

Contact Diamond Corporation is engaged in a $2 million exploration program at Timiskaming. The company identified seven distinct kimberlitic indicator mineral trains newly discovered or confirmed from previous sampling. A new kimberlite pipe was discovered in Québec adjacent to this area.

Pele Mountain Resources Inc. discovered a macrodiamond-bearing mica kimberlite on its Wawa area property. The kimberlite has been drilled along a strike length of 1100 m and remains open along strike and depth. A total of 34 diamonds were recovered from a 1311-kg sample of drill core.

Uranium

Rampart Ventures Ltd. is actively exploring its claim group located within the Sibley Basin in the Black Sturgeon Lake area; these claims are located approximately 100 km north-northeast of Thunder Bay. Shallow drilling has intersected 2.99% U_3O_8 across 1.5 m; grab samples have assayed as high as 19.9% U_3O_8. A new phase of drilling will commence in January 2007.

El Niño Ventures Inc. holds eight uranium properties in Bancroft, an area of historic uranium production. The company completed exploration of all eight properties in 2005 and follow-up of selected areas in 2006. Through an option agreement between El Niño Ventures Inc. and Boulder Creek Exploration Inc. in October 2006, Boulder committed funding of a minimum of $1 million on the property.

Pele Mountain Resources Inc. is currently conducting a 1000- to 1400-m (6-hole) diamond drill program at its Elliot Lake project. Approximately 1400 claim units have been staked for uranium in the Elliot Lake area covering virtually all known occurrences of uranium hosted by quartz pebble conglomerate of the Matinenda Formation.

Molybdenum

Golden Phoenix Minerals Inc., a Nevada-based mining company, acquired the past-producing Spain molybdenum deposit and the Legree molybdenum prospect in Renfrew County. Previous diamond drilling indicated approximately 500 000 lb of molybdenum. Records show grades in excess of 1% molybdenum along a 200-ft strike with exploration potential extending 4500 ft to the property boundaries.

Roxmark Mines Limited began milling molybdenum ore (surface bulk sample) from its Nortoba-Tyson property at its Northern Empire mill in Beardmore. It is anticipated that up to 3000 tons of ore will be milled. Construction of a portal leading to underground development is planned immediately following completion of the surface bulk sample.

Other Commodities

Temex Resources Corp. acquired the Miller Lake O'Brien silver property and related assets and facilities from Sandy K Mines, located on a property 3 km northeast of Gowganda. The company is currently conducting a diamond drill program and plans to test a tailings bulk sample.

Canadian Wollastonite continued development of the St. Lawrence deposit, a high-grade wollastonite deposit north of Kingston. Bulk testing and process design were completed. The project is in the final stages of pre-production engineering and development. Construction of a 1:5-scale pilot plant is planned to begin in early 2007.

Avalon Ventures Ltd. removed a 300-t sample from the Big Whopper deposit. This sample was crushed and will be shipped to the customer for evaluation. Avalon also plans to remove a 15 000-t sample for evaluation.

Ontario - Committed to Mineral Development

The Ontario government is deeply committed to helping advance mineral development and foster confidence in the province, as shown by the implementation of Ontario's first-ever Mineral Development Strategy. An important element of the strategy supports Ontario's vision for a new research and development centre in Sudbury, the heart of the world's largest mining area, to keep the province at the forefront of this highly competitive, technology-driven industry. To that end, $10 million was provided to Laurentian University to launch the Centre for Excellence in Mining Innovation (CEMI). The Centre will focus on mining exploration, deep mining research, integrated mine process engineering, telerobotics and automation, and environment and reclamation.

The following are highlights of the work being done on several fronts to advance mineral development in the province.

Improving Service

Ontario is working with the industry and other ministries to improve regulatory efficiency without compromising environmental responsibility associated with mineral development. With industry and other ministry participation, a Web-based repository for all permitting and approvals information was developed. The new web site (www.serviceontario.ca/mining) provides a centralized location to access information, advice, regulatory requirements, and on-line services from various ministries related to the full range of activities from prospecting through mining to reclamation and closure.

A Wealth of Geoscience Information

The Ontario Geological Survey (OGS) Branch of the Ministry of Northern Development and Mines (MNDM) provides extensive and objective information on Ontario's geology and its world-class mineral resources. The newest data collection program undertaken by the OGS is the current Far North Geological Mapping Initiative. The Ministry is hopeful that exciting developments will come out of this three-year, $15 million program, which includes airborne geophysical surveys, on-the-ground geochemical surveys, and geological surveys in the under-explored far northern part of the province. In addition to the economic development objectives, the public geoscience results support several Aboriginal community interests related to land-use planning and values mapping.

Unparalleled Access to Data

The Ontario government has made giant leaps in digitizing information and in increasing and improving access to that data. The award-winning ClaimMap system of monitoring and illustrating claim-staking activity throughout the province is second to none. Recently, the Ontario government also introduced GeologyOntario (www.ontario.ca/geology), a state-of-the- art web site that provides unparalleled electronic access to a wide range of geoscientific data, including all OGS publications and assessment reports in government files. This system, designed with user input, is more than a data server; it also facilitates and supports investment and land-use decisions.

Toward Effective Consultation With First Nations

MNDM remains committed to meeting its constitutionally mandated duty to consult with Aboriginal communities and to ensuring that activities within its purview occur in a manner that is consistent with the Crown's obligations concerning Aboriginal and treaty rights.

As outlined in Ontario's Mineral Development Strategy, MNDM is initiating discussions on how to develop mining-related consultation guidelines with the goal of developing improved consultation approaches that work for Aboriginal peoples, Ontario, and the minerals industry.

To this end, in early 2007, MNDM issued a discussion paper that details the engagement approach. The discussion paper, provided to Ontario's First Nations, Tribal Councils, Treaty Organizations, and mineral exploration and mining stakeholders and associations, is one of the tools that MNDM is using to seek comments, concerns, and ideas to help in collaboratively developing Aboriginal consultation guidelines for mineral sector activities.

2.7 MANITOBA[14]

Overview

Exploration and Development

Surging metal prices driven by sustained high demand continued to stimulate exploration spending in Manitoba in 2006. Company spending intentions for the year are estimated at $52.0 million, comparable to the $52.9 million spent in 2005.

The total area of mining claims and mineral exploration licences as of December 31, 2006, was 4 576 778 ha, compared to 4 775 538 ha in 2005. The total area of mineral dispositions and leases in good standing as of December 31, 2006, was 4 726 543 ha, compared to 4 925 311 ha at the end of 2005. Surface exploration diamond drilling in 2005 totaled 134 899 m.

BASE METALS

Historic highs in nickel prices, coupled with Manitoba's proven world-class nickel deposits, generated new exploration activity and spurred new development and expansion plans for existing facilities in the province.

Inco Limited reported a significant boost to its capital spending budget, which includes a $45 million investment in a new deposit, the 1-D Lower orebody located at the north end of its Thompson facility. Construction started early in 2006 and first production began in October, sooner than originally anticipated. Overall, the company is planning on spending an average of $150 million annually over the next two years on its infrastructure at Thompson.

Ongoing drilling by Inco near its Thompson mines has demonstrated significant potential for open-pit mining of two new deposits, the Thompson 1-C Surface zone and the 1-D Surface zone. Drilling projects to locate new zones of nickel mineralization within and near existing infrastructure are also returning encouraging results at depth at both the Thompson and Birchtree mines.

On October 24, Companhia Vale do Rio Doce (CVRD) of Brazil acquired control of Inco Limited, a deal that will ultimately create the world's second largest diversified miner. CVRD reported it has no plans for selling any of Inco's assets; its mandate is to grow the nickel operations. Once the acquisition is finalized, Inco shares will be delisted and the new company, to be called CVRD Inco Limited, will be based in Toronto and responsible for CVRD's global nickel business. To ensure the long-term success of CVRD Inco, Canadian expenditures will be increased in a number of areas, including exploration and research and development, for a three-year period.

Crowflight Minerals Inc. has a number of projects under option from Xstrata Nickel (formerly Falconbridge Limited) in the Thompson Nickel Belt. The most advanced is the past-producing Bucko Lake nickel deposit at Wabowden where Crowflight has completed a program of in-fill drilling to upgrade Bucko's indicated resource figure. Based on the 2006 drilling, the deposit is now estimated to contain NI 43-101-compliant indicated resources of 2.5 Mt grading 2.01% nickel plus inferred resources of 1.2 Mt grading 2.23% nickel. The upgraded figure represents a 32% increase in indicated resources, compared to an NI 43-101 report filed in January 2006. The company has acquired a used hoist and headframe, as well as a used concentrator. Construction of the foundation for the headframe commenced in the fall and additional work is under way on related surface sup-

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[14] The Manitoba review of activities was prepared by the Mineral Resources Division of Manitoba Science, Technology, Energy and Mines. For more information, the reader is invited to contact Ric Syme, Director, Manitoba Geological Survey, by telephone at 204-945-6556 or by e-mail at Ric.Syme@gov.mb.ca.

port infrastructure buildings. Crowflight has applied for an environmental licence and hopes to have the mine in production by the end of 2007 to take advantage of high nickel prices.

Crowflight also made two new nickel discoveries near Wabowden earlier in the year. At the M11A North zone located 3 km northeast of Bucko, the discovery hole intersected 15.5 m of 0.97% nickel while a second hole returned 30.2 m of 1.02% nickel. Both drill-hole intercepts contained shorter intervals of higher-grade material. At the other new discovery, the Apex zone, located approximately 3 km north of Bucko, the initial hole intersected 11.4 m grading 0.91% nickel, including 4.1 m of 1.11% nickel. The Apex zone discovery was made based on results of a MIDAS airborne magnetic survey flown in 2005 that identified a number of previously unexplored targets requiring follow-up, many of which remain untested.

Independent Nickel Corp. completed a first-phase drill program on mineral leases that cover the past-producing Lynn Lake nickel mine. The company reported intersecting new mineralization over appreciable core widths. A preliminary economic assessment completed in September concluded the property contains measured and indicated resources of 14.6 Mt of 0.7% nickel and 0.4% copper. A 20 000-m second-phase drill program is planned for 2007 to test the highest-priority targets in the mine.

North American Palladium Ltd. (NAP) completed a program of line cutting and a 3-D induced polarization (IP) geophysical survey on a nickel property near Lynn Lake optioned from Rare Earth Metals Corp. The property covers five separate mafic-ultramafic intrusions with similarities to the mafic intrusions that hosted the historic Lynn Lake nickel deposits. NAP later decided not to renew its option and has returned the property to Rare Earth Metals in order to concentrate on its more advanced exploration projects.

Western Warrior Resources Inc. completed a 15-hole drill program at its Eppler Lake project west of Churchill in the Seal River area. This initial drill program was designed to test the shallow and most easily accessible anomalies for base- and precious-metal mineralization. An intersection of semi-massive pyrite returned 3.36 g/t gold over 1 m, while other holes returned stratigraphic horizons or sulphide zones carrying anomalous base-metal or arsenic values.

Western Warrior acquired three additional exploration licences known as the Caribou property located north of its Eppler Lake project area. The company completed a high-resolution airborne magnetic survey and a major follow-up program of till sampling and/or diamond drilling is planned for both the Eppler and Caribou properties in 2007.

Callinan Mines Limited conducted geophysical surveys and drilling to further define nickel-copper mineralized zones discovered at its Philips Lake and Pine properties near Wabowden. In 2005, Callinan intersected thick intervals of low-grade mineralization at Philips Lake. At the Pine property, drilling encountered a narrow interval of ore-grade material.

Callinan and joint-venture partner Bell Resources Corporation completed ground geophysics on their Fox River property southeast of Gillam. Since 2003, Callinan has acquired over 167 000 ha of ground in the area via exploration licences. The region is highly prospective for nickel sulphide deposits due to its proximity to the eastern extension of the Thompson Nickel Belt. Ground geophysics has outlined a very large and strong conductor that the partners plan to drill test as part of a proposed 20-hole drill program this winter. Furthermore, Callinan has outlined potential kimberlite targets in the southeastern portion of the project area.

East of Gillam, BHP Billiton Diamonds Inc. conducted drilling at the Stephens Lake property, which was under option from ValGold Resources Ltd., Cream Minerals Ltd., and Sultan Minerals Inc. The property is extensively covered by glacial till and Paleozoic sedimentary rocks that overlie Precambrian lithologies believed to represent the extension of the Thompson Nickel Belt. Drilling

on the property in 2005 intersected a thick, serpentinized ultramafic unit similar in composition to ore-hosting lithologies in the Thompson area. The ultramafic unit contained a narrow massive-sulphide band that has significant implications for the area's potential to host nickel sulphide deposits. BHP Billiton recently returned the property to the vendors, who are now assessing the many untested geophysical targets that remain on the property.

Nuinsco Resources Limited conducted drilling at the Minago nickel deposit located 225 km south of Thompson. Drilling to test the resource at depth returned a 551-m core length grading 0.55% nickel, including an 81-m interval of 1.12% nickel. Measured and indicated resources at Minago total 49.1 Mt of 0.52% nickel. The results of a scoping study completed in November for Minago were positive, indicating the project has a net present value of $334 million with a total cash flow of $953 million. With total capital costs estimated at $441 million, the study concluded the project would support a 16-year mine life (open-pit and underground) producing 314 Mlb of nickel and 15 Mlb of copper, plus by-product credits at an average life-of-mine operating cost of $3.82/lb of nickel. Nuinsco plans on completing a bankable feasibility study before the end of 2007 that will incorporate 11 000 m of additional drilling along with further metallurgical testing, environmental studies, and project permitting.

In southeastern Manitoba, Mustang Minerals Corp. has two major nickel-copper projects in progress. At the Maskwa deposit, an independent resource study concluded the deposit contains an open-pit and underground indicated resource of 6.02 Mt of 0.74% nickel and 0.15% copper. Preliminary metallurgical testing suggests that a marketable nickel concentrate with acceptable nickel recoveries can be produced at Maskwa. A scoping study to evaluate the economic feasibility of bringing the deposit into production commenced in September. Mustang entered into a private placement agreement in November with Australian-based Western Areas NL. If the transaction is fully exercised, Western Areas will acquire a 19.9% interest in Mustang for an aggregate sum of $5 million. Mustang intends to use the majority of the proceeds to complete a feasibility study for an open-pit mine at Maskwa.

Drilling at Mustang's Mayville property, 35 km north of the Maskwa deposit, has partially outlined a large, low-grade copper-nickel deposit called the M2 zone. With over 70 drill holes completed, M2 has been intersected over a 1.2-km strike length and remains open along strike and at depth. Mustang recently commissioned an independent mineral resource calculation for M2.

Copper-zinc producer HudBay Minerals Inc. announced in December that it would boost early-stage exploration on its Manitoba properties to $26 million. In addition, it will invest $8.5 million at its Bur deposit near Snow Lake to conduct in-fill drilling, extract a 10 000-t bulk sample, obtain the necessary permits, and complete a feasibility study. Bur hosts an NI 43-101 non-compliant indicated resource of 391 000 t of 2% copper and 9% zinc. More recent drilling has shown the resource base can be expanded. HudBay hopes to complete the feasibility study by mid-2007.

In 2006, HudBay focused on drilling airborne geophysical targets in the Flin Flon, Snow Lake and Hargrave Lake-Moose Lake areas, as well as structural and geological targets around existing and past-producing mines. HudBay also has a number of small known deposits in the Snow Lake area (including Bur) that have been the subject of additional drilling and are returning some positive results. Recently negotiated option agreements with junior explorers Murgor Resources Inc. and Halo Resources Ltd. on some highly prospective HudBay properties will further stimulate base-metal exploration in the Flin Flon-Snow Lake Belt in upcoming years.

In the Sherridon area 70 km northeast of Flin Flon, Halo Resources has acquired up to 188 km^2 via claim staking and option agreements. The property covers a number of known copper-zinc deposits, including the past-producing Sherritt Gordon Mines property (7.7 Mt of 2.46% copper and 0.80% zinc). Halo completed a VTEM and magnetic airborne survey, and conducted detailed geological mapping. The company commenced a drill program in November to investigate untested VMS targets in the Sherridon area. The first drill location covers what is suspected to be the extension of

the Sherritt Gordon East zone. A recent grab sample taken in the area returned 14% copper, 2.88% zinc and 7.41 g/t gold.

Murgor Resources signed option agreements with Hudson Bay Exploration and Development Company Limited (HBED) on four base-metal deposits and two large property packages in the Flin Flon Belt in Manitoba and Saskatchewan. In Manitoba, Murgor can earn up to a 100% interest in the Hudvam and Wim base-metal deposits located between Flin Flon and Snow Lake by spending $2.25 million and $2.0 million, respectively, over three years. Murgor also signed an agreement with HBED on the Snow-H project, a grassroots project on an area covering 105 586 ha located east of Snow Lake. Murgor can earn a 50% interest in the project by spending $2.5 million over three years.

Rare Earth Metals conducted mapping and geochemical sampling programs at its Reed Lake and Sail Lake properties in the Snow Lake area. The company says that the Sail Lake property hosts a recently recognized alteration zone typical of VMS deposits, along with coincident ground and airborne geophysical anomalies. The program was intended to identify copper-zinc mineralized drill targets for the 2007 winter drill season. Work at Reed Lake was following up on several anomalous base-metal sample results obtained from a late 2005 survey.

PRECIOUS METALS

The stability of high gold prices continued to generate elevated levels of exploration activity, especially in the northern Superior Province and Bissett regions of Manitoba.

In August, San Gold Corporation poured its first gold bars at the rejuvenated Rice Lake mine in Bissett in southeastern Manitoba. The mine and 1100-t/d mill, purchased from Harmony Gold in 2004, commenced commercial production in April. The Rice Lake mine contains total measured and indicated reserves of 874 535 t of 9.9 g/t gold. The company also brought the San Gold #1 deposit into production this year. Located just east of Bissett and accessed by a new decline, San Gold #1 contains 256 890 t of 7.5 g/t gold and will supply additional feed to the Rice Lake mill. There are two other gold zones along strike of the San Gold #1 deposit that could supply future mill feed. In the spring, San Gold discovered the Cartwright zone located 1 km west of the mill property; it is returning grades and thicknesses similar to the Rice Lake mine.

A new, comprehensive NI 43-101-compliant Rice Lake project report completed in December increased San Gold's total measured and indicated resources to 403 000 oz of gold and total inferred resources to over 1.02 Moz of gold. The report, prepared by A.C.A. Howe International, included over 400 000 oz of inferred resources in the new Cartwright deposit discovered in April. The report also concluded that when additional resources identified in the Cartwright and San Gold #2 and #3 zones are developed over the next two years, it will bring the mill to its full capacity of 1100 t/d by the end of 2008.

Wildcat Exploration Ltd. completed a short four-hole drill program at its Poundmaker property near Bissett before terminating the program early due to mild winter weather conditions. Drilling returned low gold values from new showings at the Gold Creek shear zone and the Liberty showing. A mobile metal ion (MMI) geochemical survey completed in the spring at Poundmaker outlined a significant gold-silver anomaly that appears to be associated with the Gold Creek shear zone. Wildcat also completed geophysical and geochemical surveys, along with mapping, at the Rio zone within the largely underexplored Poundmaker property.

At Wildcat's Jeep property, summer fieldwork outlined a new nickel-copper-gold-PGE-bearing sulphide mineralized zone near the former Jeep gold mine. A drill program commenced in late October to define the size and grade of the poorly exposed sulphide zone and to test the continuity of gold mineralization at depth at the Jeep mine. Although most assays were still pending, results from the initial six holes indicated the sulphide mineralization consists of two distinct zones of disseminated

to massive sulphide with the zones being up to 70 m thick. An assay from an intersection of a quartz vein on strike with the Jeep underground workings returned 109.5 g/t gold. The company was planning to accelerate and expand the drill program in early 2007.

Harvest Gold Corporation completed line cutting and an IP survey at the Red Hill zone on the Lesavage North property near Bissett. The zone was discovered during the course of mapping, geochemical sampling, and a five-hole drill program completed in the fall of 2005. Follow-up work in 2006 outlined an 800-m geophysical anomaly that correlates with an anomalous gold surface geochemical anomaly. A six-hole summer drill program was conducted to test strong IP anomalies identified at depth at Red Hill, as well as extensions along strike and newly identified anomalies in the area. Results from the second phase of drilling included only anomalous gold values. However, a second separate mineralized zone was identified at the base of one of the recent drill holes.

Harvest Gold acquired an option to earn a 100% interest in the Rock Ridge gold property in the Bird River area near Lac du Bonnet. The property was subsequently optioned to Grandview Gold Inc., who may earn a 70% undivided interest in the property. A 1500-m drill program testing surface gold showings was expected to be completed in late December with results due in early 2007. Previous prospecting and sampling returned values of 140.6 and 53.1 g/t gold.

Rolling Rock Resources Corporation acquired the Monument Bay gold project in northeastern Manitoba from partners Bema Gold Corporation and Wolfden Resources Inc. Since 1999, drilling by Wolfden and Bema had considerably expanded the gold resource outlined by previous operators. An NI 43-101-compliant technical report prepared on behalf of Rolling Rock determined the Monument Bay property contains an inferred mineral resource of 3.38 Mt at an average grade of 6.46 g/t gold using a 3 g/t cut-off grade. A 26-hole summer drill program to improve the geological model and increase the resource estimate was highlighted by the discovery of the Burn Lake zone where drilling intersected 10.5 m of 4.7 g/t gold. A 10 000-m winter drill program is planned that will include in-fill and down-plunge drilling of the Monument Bay main zones and additional drilling at the new Burn Lake zone.

Rolling Rock also signed an option agreement to earn an initial 51% interest from New Dimension Resources Ltd. in the Domain gold project located near Oxford House in central-eastern Manitoba. Rolling Rock completed a 10-hole drill program on a 30-m-wide silicified zone containing variable sulphides and visible gold. The mineralization correlates along strike with the previously discovered A zone where drilling by preceding companies returned significant gold values including 5.4 g/t over 4.1 m and 12.6 g/t over 1.32 m. The recent drill program intersected values of 2.57 m of 7.18 g/t and 2.55 m of 4.04 g/t gold.

Gossan Resources Limited completed an IP and magnetic survey over a gold-copper MMI geochemical anomaly called the Bear zone at its Sharpe Lake gold property. The 24 152-ha property covers 40 km of the western strike-extension of a major deformation zone, the Stull Wunnummin Fault zone, which transects the Rolling Rock-Monument Bay gold property. The Bear zone displays pervasive sericite-ankerite-quartz alteration containing anomalous gold values up to 1.4 g/t gold and has a minimum recognized strike length of 6 km.

Kaminak Gold Corporation entered into an agreement to acquire a 100% interest (from a numbered Manitoba company) in a 5000-ha property located between two of Gossan Resources' three Sharpe Lake exploration licences. Kaminak conducted a summer geochemical sampling and mapping program designed to outline priority gold targets along the same deformation zone that is encompassed by the neighbouring Gossan and Rolling Rock properties.

In October, Garson Resources Ltd. and Piper Capital Inc. entered into an agreement with Kinross Gold Corporation and High River Gold Mines Ltd. to acquire a 100% interest in the New Britannia gold mine and mill at Snow Lake. The operation was placed on care and maintenance in early 2005. At that time, the mine contained a measured and indicated resource of 2.2 Mt of 5.11 g/t gold. The

property consists of 7500 ha of claims and leases containing numerous gold showings and two past-producing gold zones, the No. 3 and Birch zones. The No. 3 zone, which contains 220 000 t of 7.10 g/t gold, has potential for increasing resources and will be the focus of an initial drill program immediately upon closing of the transaction.

Also in the Snow Lake area, Black Pearl Minerals Consolidated Inc. completed a 2300-m drill program at the Wekusko Lake gold property. Drilling was distributed between delineation of the known mineralization at the Gold Dust and McCafferty zones and testing of geophysical and geochemical anomalies. Highlights from the drill program included an intersection of 22.9 g/t gold across 4.6 m at the Gold Dust zone and 8.3 g/t gold over 1.65 m at the McCafferty zone. Black Pearl has applied for the necessary permits to construct an access road into the Wekusko property in order to extract a 10 000-t bulk sample from the Gold Dust zone. The company expects to begin the bulk sampling program in late March 2007.

DIAMONDS

The search for diamonds in Manitoba continued in the Hudson Bay Lowland and Seal River areas west of Churchill. De Beers Canada Inc. completed a high-resolution airborne magnetic survey on a 20 000-km^2 land package at Seal River and reduced its exploration licences to cover the anomalous areas.

Land acquisition by a number of competitors followed the De Beers activity. Stornoway Diamond Corporation entered the province with 12 targeted exploration licences south of Churchill and conducted a nine-hole drill program on a number of targets. All of the anomalies were explained and no kimberlite was intersected. Peregrine Diamonds Ltd. applied for several exploration licences south of Churchill, but has not announced its exploration plans. Western Warrior Resources acquired exploration licences south of the Nunavut border, augmenting its Eppler Lake property west of Churchill. The company followed up its Eppler Lake high-resolution airborne survey with an 1850-m drill program. While no kimberlite was discovered, a number of anomalous gold and base-metal analyses were returned.

URANIUM

CanAlaska Uranium Ltd. conducted a surface sampling program on its North East Wollaston project, which is partially incorporated within exploration licences in the northwest corner of the province. The sampling program was conducted based on results from lake sediments sampling and prospecting programs carried out in 2005. Assay results have revealed multiple areas returning 0.5-11.1% U_3O_8 and some samples returned high molybdenum values. The uranium mineralization is associated with granitic and altered sedimentary rocks, and many of the target zones bear similar signatures to basement-style mineralization within the Athabasca Basin. A winter drill program is planned for 2007.

SPECIALTY/INDUSTRIAL MINERALS

In 2005, Agrium Inc., a leading global producer of agricultural nutrients, acquired a five-year, 45 000-ha exploration permit to explore for potash in the St. Lazare area. The company has conducted preliminary seismic surveys in its permit area and is reviewing its data. If exploration results are successful, Agrium has the option to convert the exploration permit to a potash mineral lease within the five-year term to facilitate mining.

BHP Billiton, the largest diversified mining company in the world, will study the feasibility of mining a large potash deposit in the Russell-Binscarth area. The deposit was owned by the Province of Manitoba (49%) and Potamine Corporation of Canada (51%) as joint partners in the Manitoba Potash Corporation (MPC). MPC was created in 1986 to hold the assets of the Russell-Binscarth potash project. In November, BHP bought out Potamine's share in MPC and will be submitting a $15 million exploration and feasibility plan to the provincial government within the next two years.

Sodium chlorate for the pulp and paper industry continued to be produced by Nexen Inc. at its Brandon plant, the world's largest at 263 000 t/y. Nexen, the world's largest producer of sodium chlorate, presently purchases salt for its Brandon plant from Saskatchewan potash producers. In 2006, Nexen announced that a further $50 million expansion will increase the production capacity of the plant by 12% to 296 000 t/y by 2008.

A new $14.5 million peat moss packaging plant, located at Richer, was officially opened by Premiere Horticulture Ltd. on November 13, 2006. The Province provided a $3 million loan to rebuild and relocate the plant, formerly at Giroux, which was destroyed in a fire in September 2005. The plant will eventually employ about 57 people. At the time of the opening, the new plant was about 70% completed.

In May 2006, Gossan Resources Limited completed a 27-hole drill program within a 445-ha area on its property north of Inwood. The drilling of the 12-m-thick dolomite, below little or no overburden, indicated inferred resources of over 132 Mt grading 21.32% MgO, including almost 35 Mt of measured resources averaging 21.18% MgO. Gossan feels that the measured resources could support an 80 000-t/y magnesium metal production facility, assuming a positive feasibility study. The metal might be used to produce magnesium-aluminum alloy and as a structural metal in the auto industry in die casting.

Gossan Resources initiated a drill program in November 2006 on its high-purity silica sand property on the east shore of the south basin of Lake Winnipeg. The drilling will test the silica sand potential of a 2300-m-long ridge that varies in width from 100 to 250 m. Analysis of a composite of 19 silica sand samples from a 2004 drilling program returned a silica content of 94.2% (without sizing or treatment).

Nuinsco Resources Limited will carry out a drill program in 2007 to test the silica sand potential on its Minago nickel deposit property south of Thompson. An estimated 3.0 Mt of fracturing or hydraulic "frac" sand forms 25% of the 10-m-thick Winnipeg Formation basal sandstone that is part of the cap rock above the nickel orebody. The cap rock would have to be stripped to develop an open-pit mine. Nuinsco would like to sell the frac sand to the oil and gas industry, where it is pumped under high pressure into wells drilled previously in oil- or gas-bearing rock to enlarge or scour out openings or to create new fractures.

In 2006, Lehigh Cement Ltd. completed a drilling program to evaluate the gypsum potential of its quarry permits near Harcus on the west shore of Lake Manitoba. Gypsum is used in cement manufacturing.

Tantalum Mining Corporation of Canada Ltd. continued exploration for tantalum- and cesium-bearing pegmatites in the Bernic Lake area in southeastern Manitoba.

Manitoba Geological Survey Activities

In 2006, the Manitoba Geological Survey (MGS) continued significant in-depth investigations in the Superior Boundary zone and Thompson Nickel Belt (TNB), the Paleoproterozoic Flin Flon Belt, and the Bissett and Bird River regions of southeastern Manitoba. Phanerozoic investigations focused on completing the surficial geology compilation for the province and completion of the Williston Basin Targeted Geoscience Initiative. New field projects were initiated in the northern Superior Province, the Kasmere Lake area of Manitoba's far north, and the Wuskwatim Lake and Flin Flon areas.

In 2005-06, the MGS published seven geoscientific reports, including the annual *Report of Activities*, and 38 maps. In response to client needs, the majority of the publications were released in hard copy for purchase through Publication Sales and in electronic format for free download via the Web.

Partnerships continued to play an important role in Manitoba geoscience investigations. The MGS is engaged in partnered initiatives with the federal government, the minerals industry, and several Canadian universities. The projects facilitate the training of future geoscience professionals, including, in 2006, two post-doctoral fellows, four Ph.D. candidates, five M.Sc. candidates, and three Honours B.Sc. students. Primary focuses for partnerships in 2006 were the Flin Flon Targeted Geoscience Initiative project and the Bird River suite of projects.

Targeted Geoscience Initiative

In February 2005, the Government of Canada committed $25 million over five years to extend the mission of the Targeted Geoscience Initiative (TGI) Program, which has included two previous programs (TGI-1 in 2000-03 and TGI-2 in 2003-05). These are partnership programs delivered in collaboration with provincial geological surveys and with participation by industry and universities.

The goal of the TGI-3 Flin Flon project is to aid in the discovery of new reserves of base metals in vulnerable, established mining communities of Manitoba and Saskatchewan (the area encompassing Flin Flon, Snow Lake, Leaf Rapids, Thompson-Wabowden west of the Thompson Nickel Belt, Lynn Lake, La Ronge, and Creighton). The project has been developed through joint provincial-federal-industry consultation and is delivered as an integrated partnership that includes the minerals industry, researchers from Laurentian and McGill universities, and geologists from the MGS, Saskatchewan Industry and Resources (SIR), and the Geological Survey of Canada (GSC).

Components of the Flin Flon TGI-3 project led by the MGS in 2006 include:

- A new 1:10 000-scale "cross-border" geological map of the Flin Flon area, with mapping led by MGS and SIR. This map will form the surface of a "3-D knowledge cube" to be combined with subsurface information from GSC-funded seismic surveys and drill-hole information.

- Detailed mapping in the footwall and hangingwall rocks of the Flin Flon, Callinan and Triple 7 deposits by Laurentian University researchers and graduate students.

- New mapping, geochronology and isotopic analyses in the Kisseynew Domain west of the TNB by MGS and GSC scientists, aimed at a reinterpretation of the geology in the area recently covered by the TGI-3 Wuskwatim Lake high-resolution aeromagnetic survey. A major implication of this work is that Thompson-type nickel mineralization may exist within the Ospwagan-like rocks present in the 60-km-wide zone west of the TNB proper.

- A metallogenic and metamorphic study of selected gold-bearing deposits from Snow Lake and the southern flank of the Kisseynew Domain by a McGill University Ph.D. candidate.

Bird River Projects

In 2005, the MGS initiated a government-industry-university partnership in the Bird River Belt of southeastern Manitoba. Partners in the initiative include the MGS, researchers and graduate students at the University of Waterloo (partially funded by three exploration companies active in the belt, the University of Waterloo, and the Natural Sciences and Engineering Research Council of Canada). The group is undertaking mapping, structural analysis and geochronological investigations in order to better understand both the evolution of the Bird River Belt and the setting of the various deposit types, and will aid in supporting the exploration programs that are currently under way in the area.

Components of the Bird River project include:

- Regional mapping in the Bird River greenstone belt by MGS, focusing on stratigraphy and volcanic geochemistry.

- Regional structural studies by a University of Waterloo post-doctoral fellow.
- An M.Sc. thesis focused on the structural constraints on the emplacement of rare element pegmatites around the Tanco mine.
- An M.Sc. thesis focused on the Bird River Sill, a mafic-ultramafic layered intrusion within the Bird River Belt, with implications for sulphide and PGE mineralization.

Other Projects in Manitoba's Precambrian Shield

MGS geologists have finalized a series of 1:20 000 and 1:50 000 geological maps of the exposed and sub-Phanerozoic TNB covering an area of more than 10 000 km^2. These maps, developed with industry partners, are the product of a multi-year collaborative program designed to capture both company and government information on the TNB. The compilation was released on CD in November 2006.

Field investigations were initiated by a Ph.D. candidate at the University of Calgary to document the characteristics of the Ospwagan Group supracrustal rocks in the TNB at different metamorphic grades. This work will greatly increase the ability to recognize Ospwagan Group rocks throughout the TNB.

New work was initiated at Bear Lake in the northern Superior Province. Together with planned mapping in the Atik Lake area, this study will provide an improved geological context and regional framework for base- and precious-metal exploration in this part of the northern Superior Province.

As part of the MGS's initiative to update the geological knowledge base of Manitoba's far north, field investigations in 2006 were focused on the Kasmere Lake and Putahow Lake areas. Detailed bedrock mapping and sampling were undertaken for lithogeochemical, isotope geochemical and geochronological studies to support ongoing uranium and gold exploration in the area. Landscape analysis in the Kasmere-Putahow lakes area underlines the importance of the distribution of subglacial meltwater-flow corridors when determining the bedrock source for mineral anomalies.

In the Garner-Gem lakes area, 45 km southeast of Bissett in southeast Manitoba, the MGS continued a program of bedrock mapping, structural analysis, lithogeochemistry, isotopic studies, and geochronology to better understand the rock types, stratigraphy, structure and deformation history of the various supracrustal assemblages in the area.

The petrography, mineralogy and geochemistry of two macroscopically distinct drillcore samples of "kimberlitic" rock from the southern Wekusko Lake area were examined in detail by researchers from the University of Manitoba and the MGS. The studied samples are tentatively identified as magnesiocarbonatite; further studies using isotope-analytical techniques will be required to constrain the source and evolutionary history of these rocks.

The Mineral Deposits Database currently used to support the Web-based GIS Map Gallery presentation is being redesigned as an Oracle database. The newly designed database will centralize all mineral deposit data currently available and provide users with a search engine to customize queries. Version 1 of the database should be ready for release (on CD-ROM) by November 2007.

The Manitoba Geochronology Database was re-released in November 2006 after verification of all data and standardization of geological and bibliographic information.

Recompilation and updating of existing maps to produce a seamless 1:250 000-scale digital geological base for Manitoba has been completed for approximately half the province.

Phanerozoic Investigations

The "Williston Basin Architecture and Hydrocarbon Potential" Targeted Geoscience Initiative project was a multi-disciplinary geoscientific study aimed at characterizing and understanding basin architecture and hydrocarbon potential in the Williston Basin. This two-year study ended formally in March 2005, but work continues to complete and publish project products. Interprovincial subsurface stratigraphic correlations for the entire Phanerozoic section have been completed and final map production for the project is to be completed by March 2007.

A study to compile Phanerozoic structural information for the Western Canada Sedimentary Basin was begun in collaboration with the Alberta and Saskatchewan geological surveys. The joint prototype structural database has been designed to document structures that may have localized hydrocarbon and metal-bearing fluids in traps within the Phanerozoic stratigraphic package.

The Surficial Geology Compilation Map Series was released on DVD in November 2006. This compilation provides seamless province-wide coverage at scales of 1:250 000 and 1:500 000, and includes newly produced map sheets for northern Manitoba, as well as the NTS 1:250 000 and regional map sheets for southern Manitoba (south of 53°N) released in 2004. A 1:1 000 000-scale map will be released in 2007. The new maps will be an important tool for mineral exploration and land-use planning.

Two stratigraphic coreholes were drilled west of Lake Winnipegosis under the 2006 Corehole Drilling Program. Devonian stratigraphic studies help not only to resolve stratigraphic problems, but may also provide a further understanding of metal migration-emplacement in an area where anomalous sequences exist. Historically, anomalous lead-zinc mineralization has been found in Devonian and Silurian formations that are situated within or up-dip of the Superior Boundary zone.

The Rural Municipality of Ste. Rose was mapped this year as part of an ongoing project to update aggregate information in the province.

The Winnipeg River in northwestern Ontario is the most important component of the hydro-electric system that generates power for Manitoba. A continuing study by a Ph.D. candidate at the University of Arizona uses a network of long-term discharge gauges to examine the frequency, severity and causes of drought in the basin during the last 100 years in order to develop accurate estimates of future hydro-electric power production in Manitoba.

University of Manitoba researchers continued with a program investigating revegetation of mine tailings with a preliminary field experiment designed to test the effects of tilling, fertilizing and amending Gunnar tailings with paper-mill sludge.

Outreach

MGS mineral-education outreach initiatives included the Manitoba Mining and Minerals Convention Schools Program, National Engineering and Geoscience Week, and Provincial Mining Week.

The third annual Aboriginal Mining Workshop, which was held as part of the November 2006 Manitoba Mining and Minerals Convention, drew approximately 80 participants. The speakers, Youcef Larbi of the Cree Mineral Exploration Board in Québec, Hugh Wynne and Rod Bushie of San Gold Corporation in Manitoba, and Chief Glenn Nolan of Missanabie Cree First Nation in Ontario, shared their expertise on creating partnerships with government and industry, recruiting and training, and community engagement.

Survey staff delivered mining and geology presentations to Aboriginal communities and schools in Cross Lake, Oxford House, and Hollow Water, as well as at the Assembly of Manitoba Chiefs Youth

Gathering and St. John's Ravenscourt. In addition, staff attended Aboriginal conferences, such as Vision Quest, the Northern Association of Community Councils, and the Canadian Aboriginal Minerals Association.

Incentives

Mineral Exploration Assistance Program (MEAP)

MEAP provides financial assistance of up to 25% of eligible exploration expenditures to a maximum of $300 000 per recipient per fiscal year to companies or individuals undertaking mineral exploration in Manitoba. The program, established in the fall of 1995, aims to increase mineral exploration and stimulate activities that may lead to the development of new mines and industrial mineral deposits. To further stimulate exploration in remote areas and in areas affected by mine closures, MEAP was expanded to provide a higher percentage of assistance on eligible expenditures for projects in remote, under-explored northern regions and in the Lynn Lake/Leaf Rapids and Snow Lake regions. Companies or individuals may qualify for up to 35% of eligible exploration expenditures to a maximum of $400 000 per recipient per fiscal year in these areas of the province.

MEAP has two offerings per fiscal year to coincide with the spring/summer and fall/winter exploration seasons. In April 2005, Manitoba renewed MEAP and will offer an additional $7.4 million in funding over a three-year period beginning with the spring 2005 offering.

PROGRAM HIGHLIGHTS FROM OCTOBER 1995 TO OCTOBER 31, 2006

- A total of 145 companies have participated in MEAP, representing 526 exploration projects.
- Of the 145 companies, 107 are considered new to Manitoba, 20 are major exploration companies, and 125 are junior companies (a company is considered a major exploration company if its market capitalization is greater than $100 million).
- A total of $20.2 million in assistance has been issued to 526 completed projects.
- A total of $120.1 million in exploration expenses has been reported.
- Reported exploration expenditures under the program indicate that every $1 million in assistance paid generated $6.0 million in exploration expenditures.

Five MEAP-assisted exploration projects are undergoing pre-feasibility studies for potential mine development:

- the Rolling Rock Resources Corporation Monument Bay gold project in northeastern Manitoba;
- Independent Nickel Corp.'s project at the former producing Lynn Lake nickel-copper mine;
- Mustang Minerals Corp.'s Maskwa nickel-copper deposit in southeastern Manitoba;
- Nuinsco Resources Limited's Minago nickel-copper project northwest of Lake Winnipeg; and
- Crowflight Minerals Inc., who has applied for an *Environmental Act* licence and hopes to have the Bucko nickel-copper deposit near Wabowden in production by the end of 2007.

In 2006, San Gold Corporation re-opened the Rice Lake mine in Bissett to become Manitoba's only primary gold mining and milling operation and Canada's newest gold producer. Financial assistance from MEAP helped San Gold conduct early-stage exploration and continues to support current exploration programs.

Manitoba Prospectors Assistance Program (MPAP)

MPAP was introduced in 1992 to provide financial support to self-employed prospectors and to increase mineral prospecting in the province. Qualified applicants receive up to 50% of expenditures incurred to a maximum assistance level of $7500 per applicant per year upon completion of the field project and submission of an acceptable report. Additional assistance of up to $1500 per year for the cost of chartered fixed-wing aircraft is available for projects undertaken in more remote areas of the province. In April 2005, MPAP was renewed for another three years at a funding level of $123 100 per year.

Since the inception of the program, 281 projects have been completed with approved expenditures totaling $2 491 440. A total of $1 245 720 in assistance has been paid out.

Manitoba Mineral Exploration Tax Credit (MMETC)

The MMETC was introduced by the Government of Manitoba in April 2002 to promote investment in Manitoba-based exploration projects. The MMETC is a 10% non-refundable personal income tax credit for investors in eligible flow-through shares of qualifying mineral exploration companies and can only be applied against Manitoba tax payable. The MMETC parallels and tops up the 15% federal exploration tax credit. Eligible investments and qualifying exploration activity are tied to federal eligibility, except that substantially all of the exploration activity must be undertaken in Manitoba. With the re-instatement of the federal tax credit in 2006, Manitoba also renewed its MMETC to continue to attract exploration investment to the province.

Assay Credit Program

For the 2005/06 fiscal year, the province allocated $20 000 towards this program. A prospector can earn assay credit coupons for eligible expenditures on exploration work. Coupons can be redeemed for assays of gold, silver, copper, lead, nickel, zinc, molybdenum, chromium, titanium or tin as specified in Manitoba Regulation 64/92. Coupons can also be redeemed for geochemical analysis of other metals not covered in the regulation by obtaining permission from the Assessment Geologist of the Mines Branch.

In fiscal year 2005/06, a total of 12 604 credits were issued to six prospectors; three prospectors redeemed 659 credits.

Land Use

Manitoba has passed several acts designed to improve land and resource management and to support economic development and protection of the environment. The mineral resource/land management program facilitates stewardship in the various provincial and municipal land and resource management planning processes. Program goals are directed at facilitating responsible mining and resource development, protecting the environment, minimizing land and resource use conflicts, and providing high-quality land and resource management planning and advisory services to planning authorities, industry, and other land management stakeholders.

Crown Land Planning

Classification, management and policy development for Crown land in Agro-Manitoba is the responsibility of the Crown Land Classification Committee. Major activities of the Crown land management process included developing and implementing Crown land plans, developing Crown land codes and policy, and supervising land use on Crown lands through an integrated management process. Other significant land management activities included evaluating Crown land sale and use proposals, providing technical advice and information on resource management activities, and facilitating land designation under various resource management acts.

Land-Use Assessment

The provincial Mines Branch, Land Management Services, provides technical support and advice to many legislative land-use review and assessment processes. All land-use proposals were assessed to ensure that the province's mineral resources were not compromised by surface development and that land-use conflicts were identified and mitigated. A new policy, procedures and process for mineral access rights were developed for ministerial approval.

Protected Areas Initiative

Manitoba's Protected Areas Initiative helps protect representative landscapes and ecosystems from logging, mining and hydro development. It involves sectoral consultations to ensure that resource industries and communities are consulted on proposals for the establishment of protected areas. Currently, 8.3% of Manitoba is legally protected from mining development with an additional 5.7% supported for protection by the mining sector.

More information on exploration and mining in Manitoba is available on the Manitoba Science, Technology, Energy and Mines' Mineral Resources Division web site at www.gov.mb.ca/minerals.

2.8 SASKATCHEWAN[15]

Most Recent Saskatchewan Exploration News

The following three news items provide important updates to this Saskatchewan review of activities. These events took place after November 1, 2006.

- Great Western Minerals Group Ltd. announced that, after incorporating the data from 14 new drill holes, its NI-43-101-compliant measured and indicated resource estimate for the Hoidas rare-element deposit increased in tonnage by 108% to 1.15 Mt at 2.362% total rare earth elements, including yttrium.

- Shore Gold Inc. released new results from its Phase 3 sampling of the Cantuar kimberlite phase of the Star Kimberlite. A total of 2753 dry tonnes graded 16.86 carats per hundred tonnes (ct/ht) and the largest stone was 16.59 ct.

- At the end of 2006, 6245 mineral dispositions covered 11.2 Mha of the province, an increase of over 3.8 Mha since the end of 2005.

Overview

Mineral exploration expenditures in 2006 were expected to be $208 million, significantly higher than the actual expenditures of $150 million reported for 2005 (**Figure 23**). Exploration continues to be driven by strong commodity prices, particularly for uranium and diamonds, but also for base and precious metals. Exploration activity has also been strong in the potash sector with 1 lease and 13 permits issued in 2006. Saskatchewan remains the pre-eminent producer of uranium and potash, providing about 30% of the world's supply of each commodity. In addition, Saskatchewan had gold, copper, zinc and silver production. Additional industrial mineral production was in aggregate, silica sand, salt, sodium sulphate, and minor bentonite and structural clay.

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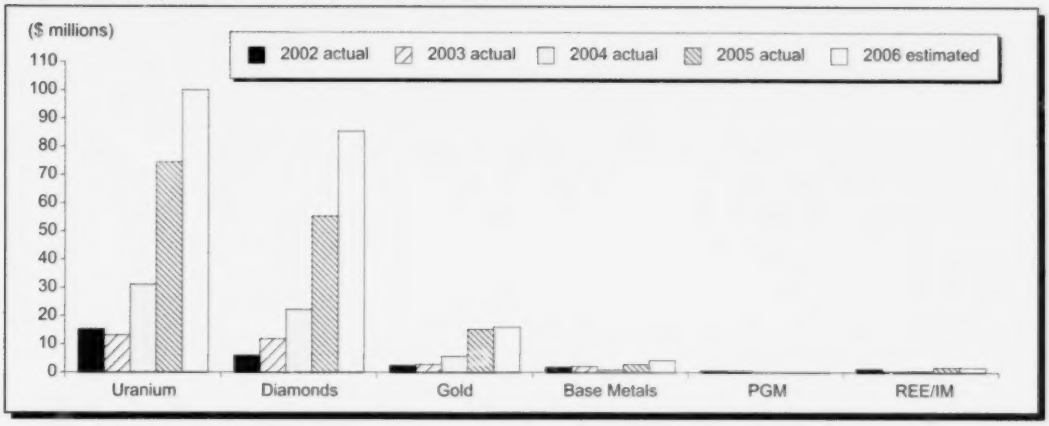
[15] The Saskatchewan review of activities was prepared by Colin Card, Sean Bosman, Kate MacLachlan and Gary Delaney of the Northern Geological Survey, and Pam Schwann and David MacDougall of the Mines Branch, Saskatchewan Industry and Resources. For more information, contact Gary Delaney, Director, Northern Geological Survey (Regina), by telephone at 306-787-1160 or by e-mail at gdelaney@ir.gov.sk.ca.

Figure 23
Exploration Expenditures in Saskatchewan, 2002-06



Source: Saskatchewan Industry and Resources.
Notes: PGM Platinum group metals; REE/IM Rare earth elements/industrial minerals.

In the Athabasca Basin and adjacent areas, it has been estimated that about $100.2 million was spent on exploration in 2006, a significant rise from the 2005 figure of $74.6 million (**Figure 23**). The spot price of U_3O_8 continued its ascent in 2006, reaching US$56/lb by the end of October 2006. Recent production shortfalls at various operations throughout the world and delays at the Cigar Lake uranium mine are expected to drive the price higher. Close to 100 companies or individuals held over 2000 mineral dispositions covering 7.6 Mha of the Athabasca Basin area at the end of December 2006. Major programs were those of producers Cameco Corporation (Cameco) and AREVA Resources Canada Inc. (AREVA), and junior UEX Corporation (UEX).

In 2006, expenditures for diamond exploration were forecast to be about $85 million, up significantly from actual total expenditures of $55.4 million in 2005 (**Figure 23**). Two advanced-stage diamond exploration projects are under way in the Fort-à-la-Corne forest, 60 km east of Prince Albert. Shore Gold Inc.'s (Shore) Star Kimberlite project is undergoing a $60 million pre-feasibility study. On adjacent ground of the Fort-à-la-Corne Joint Venture (FALC-JV), a stepped-up exploration program, budgeted at $43.2 million, is under way. The FALC-JV underwent a major ownership change in late September 2006. Shore, through its wholly owned subsidiary Kensington Resources Ltd. (Kensington), purchased the interests of De Beers Canada, Cameco Corporation and UEM Inc. (Cameco/AREVA), and then sold a 40% interest in the property to Newmont Mining Corporation of Canada Ltd.

In 2006, gold exploration expenditures were estimated to rise slightly to $16.2 million, compared to actual expenditures of $15.3 million in 2005 (**Figure 23**). These expenditures reflect the strength of the price of this precious metal, which has ranged between US$525 and US$735/oz during 2006. At Claude Resources Inc.'s Seabee gold mine, mill expansion is under way and bulk sampling is continuing at the nearby Santoy Lake and Porky Lake projects. This ore will contribute to production by year-end. In the La Ronge Gold Belt, Golden Band Resources has continued to define resources in the Waddy Lake area. In the north, GLR Resources Inc. continued the development of its resource model at the Goldfields project near Uranium City.

Increasing prices for copper, zinc and nickel renewed interest in exploration for the base metals and it is expected that $4.3 million will be spent in 2006 (**Figure 23**). Hudson Bay Mining & Smelting (HBMS), a subsidiary of HudBay Minerals Inc. (HudBay), has optioned some of its Saskatchewan properties to Murgor Resources Inc. A new joint venture between Foran Mining Corporation and

Copper Reef Mines will lead to new exploration at McIlvenna Bay, and Manicouagan Minerals Inc. has resurrected exploration at the Brabant Lake zinc deposit after purchasing it from Boart-Longyear.

In 2006, Great Western Minerals Group (GWM) released an NI 43-101-compliant resource estimate for the JAK rare earth element deposit at Hoidas Lake in northwest Saskatchewan. In late 2005, GWM, through its wholly owned subsidiary Great Western Technologies Inc., acquired and now operates a specialty metals manufacturing plant in Troy, Michigan, and thus gained access to the North American specialty metals market.

High potash prices and increasing demand worldwide in 2005 spurred renewed interest in potash exploration. A major announcement was made in June 2006 by Anglo Minerals Ltd. that, through its wholly owned subsidiary, Prairie Potash Corp., it had entered into a joint-venture agreement with BHP Billiton Diamonds Inc. (BHP), the world's largest mining company. The partners plan to explore the Jansen Lake potash property near the existing Lanigan potash mine. BHP will spend $40 million over a 5.5-year period and earn up to a 60% interest in the property.

During the summer of 2006, Whitemud Resources Inc. carried out additional drilling to further refine the size and grade of its Gollier Creek kaolin deposit. In late September, Whitemud held a sod-turning ceremony to announce its plan of constructing a $50 million metakaolin processing plant and open-pit mine near the village of Wood Mountain.

Information Sources

This paper is a review of current activity only. Most localities referred to in the text are shown on **Figure 24**. The publication entitled *Geology, and Mineral and Petroleum Resources of Saskatchewan*[16] provides a more comprehensive summary of the economic geology of the province, including historical reserve and production data. Web sources for up-to-date information on all Saskatchewan mineral occurrences are the Saskatchewan Geological Atlas,[17] Saskatchewan Mineral Deposits Index,[18] and *Saskatchewan Exploration and Development Highlights*.[19] All are available at the Saskatchewan Industry and Resources web site at www.ir.gov.sk.ca.

Current exploration expenditure forecasts are compiled from the annual survey of exploration expenditures by the resident geologists of the Northern Geological Survey Branch, Saskatchewan Industry and Resources. Actual annual expenditures for previous years are from the same survey. Grade, tonnage, and reserve and resource estimates reported herein are from a variety of public sources, including published reports, public records, corporate web sites, and Saskatchewan Mining Association Facts Sheets. They do not necessarily conform to current CIM standards and/or National Instrument 43-101 of the Canadian Securities Commission. The Department of Industry and Resources and the Government of Saskatchewan do not accept liability for any errors, omissions or inaccuracies that may be included in, or derived from, this report.

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[16] Saskatchewan Geological Survey (2003): *Geology, and Mineral and Petroleum Resources of Saskatchewan*, Saskatchewan Industry and Resources, Miscellaneous Report 2003-7, 173 pp.

[17] Slimmon, W.L. (2006): Geological Atlas of Saskatchewan, Version 9 (2006), Saskatchewan Industry and Resources, CD-ROM, version 9.

[18] Bennett, R.W. (2005): Saskatchewan Mineral Deposits Index, Saskatchewan Industry and Resources, Miscellaneous Report 2005-6, CD-ROM, version 1.0.0.

[19] Costa, A., Harper, C., Card, C., Hughes, C., Schwann, P., and Delaney, G. (2006): *Saskatchewan Exploration and Development Highlights 2006*, Saskatchewan Industry and Resources, 27 pp.

Exploration

Uranium

Staking activity continued to be vigorous in 2006, with over three-quarters of the Athabasca Basin (**Figure 24**) now under disposition; several exploration projects were also under way in areas adjacent to the Basin. By year-end, more than three dozen companies were actively exploring for uranium and new players continued to become involved. The largest programs were operated by Cameco and AREVA. Most of this activity was in the eastern part of the Athabasca Basin where the major deposits are located; however, following recent exploration successes, the western part of the Basin has become the focus of new staking and grassroots exploration programs.

Cameco, one of the most active explorers of the Basin, undertook a spectrum of programs ranging from greenfields exploration to advanced deposit delineation work. In February 2005, Formation Capital Corporation's Canadian subsidiary, Coronation Mines Ltd., a junior partner (2% interest) with UEM (50% Cameco, 50% AREVA), announced that Cameco (operator) had encountered a significant uranium intercept on the Virgin River property, west of Cree Lake (**Figure 24**), in drill hole VR-18. Wedge-cuts off VR-18 and -21 encountered good intersections, the highlight being VR-18W2, which contained 8.39% U_3O_8 over 3.9 m.

At the Eagle Point mine (**Figure 24**), brownfield exploration programs were re-started in 2003 after a 10-year hiatus. Cameco increased the reserves at Eagle Point in 2005 and ongoing exploration has identified new zones that will be incorporated in the mine plan.

The Millennium deposit (**Figure 24**), a new discovery announced at the end of 2002, entered the pre-feasibility stage in 2006. The deposit is part of the Cree Extension project, partnered by Cameco, AREVA, and Japan Canada-Uranium Company Limited (JCU), and is located southwest of the McArthur River mine. The deposit is reported to include an indicated resource of 45.8 Mlb at 4.63% U_3O_8 with an inferred resource of 11.2 Mlb at 1.81% U_3O_8.

Cameco has followed up a successful 2005 drilling program at the Collins Creek prospect (**Figure 24**), part of the Dawn Lake joint venture, with 18 additional drill holes. The best reported intersection was 11% eU_3O_8[20] over 9 m. A pre-feasibility study carried out at the Dawn Lake deposit indicated that development of the deposit is currently uneconomic.

AREVA also completed both greenfields and mine-area exploration in 2005-06. It is the operator of the Shea Creek uranium project with UEX, in the west part of the Athabasca Basin, in which UEX has now earned 24.5%. The focus of work at the project was the Kianna deposit, located between the previously known Anne and Colette deposits. New significant intersections were reported from directional cuts off discovery hole SHE-114. These included: SHE-114-5, which intersected 27.4% U_3O_8 over 8.8 m, including 58.32% over 3.5 m, 30 m above the unconformity; and SHE-114-11, which intersected 5.4% U_3O_8 over 37.7 m in the basement, including 25.46% U_3O_8 over 4 m and 5.83% U_3O_8 over 13.7 m above the unconformity. SHE-114-11 represents the first directional cut off SHE-114 that has intersected both perched and basement mineralization. New pilot hole SHE-118 intersected 8.6 m at 5.62% U_3O_8 just above the unconformity.

On the east side of the Basin, another of UEX's major programs was focused on its 56 418-ha Hidden Bay property southwest of the historic Rabbit Lake deposits. In early 2005, UEX's partner and project operator, Cameco, initiated a 101 sonic drill-hole program in order to establish an

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[20] eU_3O_8 is a uranium assay calculated from the counts per second of gamma radiation recorded from a downhole detection device (probe) as it is lowered or raised in the drill hole. Resulting counts per second are recorded at the surface and converted to uranium grade.

Figure 24
Mineral Resource Map of Saskatchewan, 2006

Figure 24
Mineral Resource Map of Saskatchewan, 2006

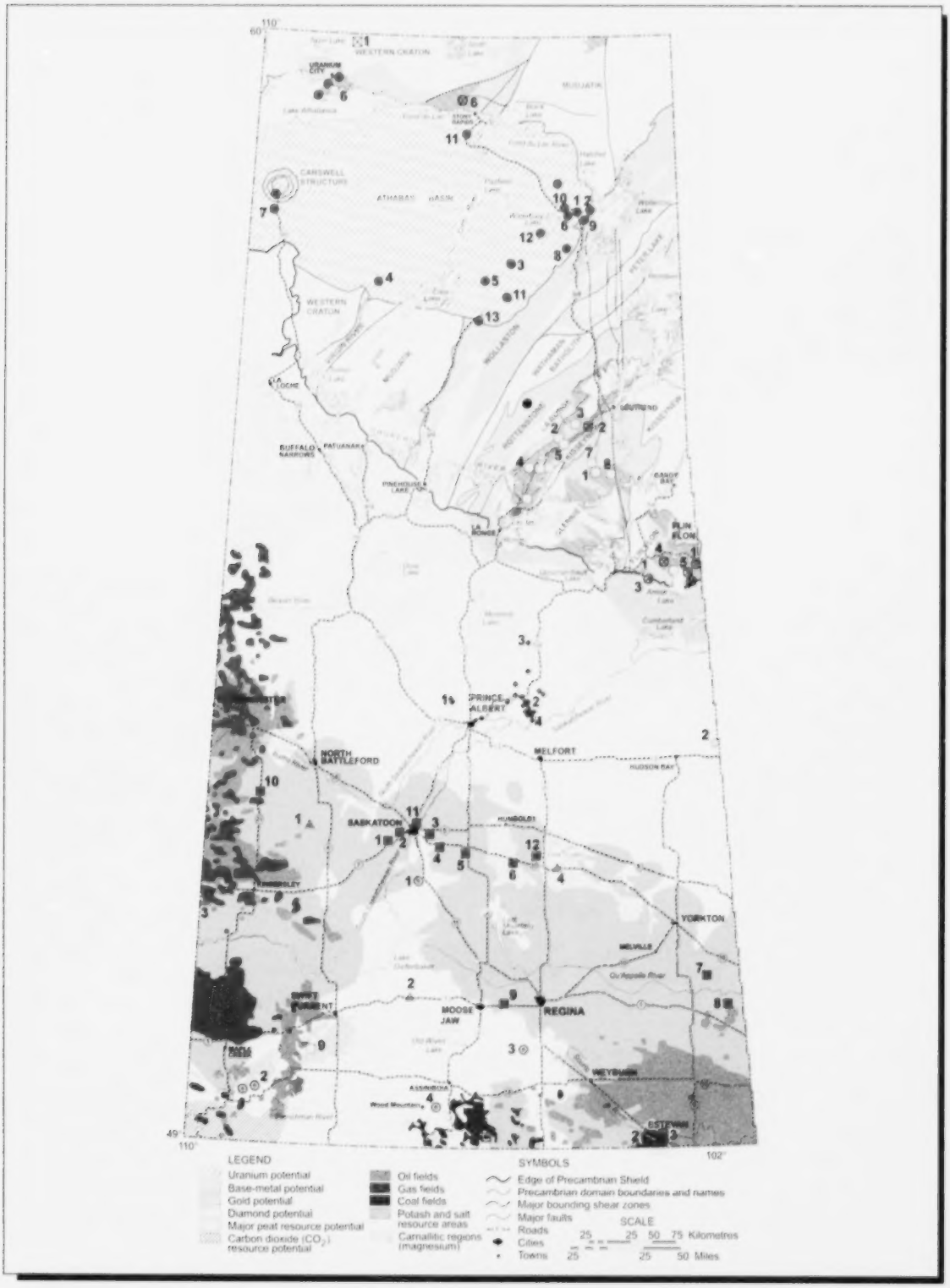

Figure 24 (cont'd)

● URANIUM
Operating Mines
1. McClean Lake Mine (North and South deposits; Sue A, B, C, and E deposits; AREVA Canada Resources Inc., 70%; Denison Mines Ltd., 22.5%; OURD [Canada] Co. Ltd., 7.5%)
2. Eagle Point Mine (Cameco Corp.); ore processed at Rabbit Lake Mill
3. McArthur River Mine (P2N Zone deposit; Cameco Corp., 69.805%; AREVA Canada Resources Inc., 30.195%)

Locations Referenced in Text
4. Virgin River
5. Millennium
6. Collins Creek
7. Shea Creek
8. West Bear
9. Raven and Horseshoe
10. Midwest
11. Moore Lake
12. Cigar Lake
13. Key Lake

Deposits and Past-Producing Mines ●

GOLD
Operating Mines
1. Seabee Mine (Claude Resources Inc.)

Location Referenced in Text
2. Jolu mill
3. Waddy Lake (Golden Heart, Tower, Memorial, Komis, EP zone Birch Crossing deposits)
4. Bingo deposit
5. Jasper deposit
6. Goldfields (Box and Athona deposits)
7. Porky deposit
8. Santoy deposit
9. Simmie showing

Deposits and Past-Producing Mines

⊘ COPPER-ZINC and COPPER-NICKEL
Operating Mines
1. Callinan Mine (Hudson Bay Mining and Smelting Co. Ltd.)

Location Referenced in Text
2. Brabant Lake deposit
3. McIlvenna Bay deposit
4. FON deposit
5. Konuto Lake deposit
6. Axis and Currie lakes deposits

Deposits and Past-Producing Mines ⊘

● COPPER-NICKEL-PGM-GOLD
Rottenstone Past-Producing Mine

⊠ RARE EARTH OCCURRENCE
1. Hoidas Lake

• KIMBERLITE OCCURRENCES
1. Sturgeon Lake
2. Fort-a-la-Corne kimberlite field
3. Candle Lake
4. Star Kimberlite

■ POTASH AND SALT
Operating Mines
1. Vanscoy potash mine (Agrium Inc.)
2. Cory Division potash mine (Potash Corp. of Sask. Inc.)
3. Patience Lake Division potash solution mine (Potash Corp. of Sask. Inc.)
4. Allan Division potash mine (Potash Corp. of Sask. Inc.)
5. Colonsay potash mine (Mosaic Potash Colonsy)
6. Lanigan Division potash mine (Potash Corp. of Sask. Inc.)
7. Esterhazy K-1 and K-2 potash mines (Mosaic Potash Esterhazy)
8. Rocanville Division potash mine (Potash Corp. of Sask. Inc.)
9. Belle Plaine potash solution mine and fine salt plant (Mosaic Canada ULC)
10. Unity solution salt mine and plant (Sifto Canada Inc.)
11. Saskatoon chloride based chemical plant (Sterling Pulp (Sask.) Chemicals Ltd.)

Locations Referenced in Text
12. Jansen Lake Project

△ SODIUM SULPHATE AND POTASSIUM SULPHATE
Operating Plants
1. Whiteshore Lake (Palo) sodium sulphate plant (Millar Western Industries Ltd.)
2. Chaplin Lake sodium sulphate plant (Saskatchewan Minerals - A Division of Goldcorp Inc.)
3. Alsask Lake potassium sulphate plant (Prairie Sulphate Corp.)
4. Big Quill Lake potassium sulphate plant (Big Quill Resources)

Past-Producing Plants △

◎ CLAY RESOURCES
1. Saskatoon clay quarry and plant (Cindercrete Products Ltd.)
2. Ravenscrag clay quarry (IXL Industries Ltd.)
3. Wilcox bentonite plant (Canadian Clay Products Inc.)
4. Gollier Creek Kaolin deposit (Whitemud Res.)

Deposit ◎

▣ COAL
Operating Mines
1. Poplar River Mine (Luscar Ltd.)
2. Boundary Dam (Shand, Costello, and Utility) Mine (Luscar Ltd.)
3. Bienfait Mine (Luscar Ltd.)

SILICA SAND
Operating Mines
1. Hanson Lake silica sand deposit (Winn Bay Sand)

Source: Saskatchewan Industry and Resources.

NI 43-101-compliant resource for the West Bear deposit (**Figure 24**). The resulting resource estimate was 1.4 Mlb at 1.385% U_3O_8. The best drill result to date returned 4.9% U_3O_8 over 10.1 m, including 8.1% over 5.5 m, from UEX-026. At the nearby Raven and Horseshoe deposits (**Figure 24**), UEX reported results from the first 16 holes of its Phase 2 program that aims to establish an NI 43-101 resource. This drilling returned a best-ever intersection of 4.53% U_3O_8 over 12.35 m.

On September 18, 2006, Denison Mines Inc. and International Uranium Corporation (IUC) announced a merger agreement to create a mid-tier uranium producer. In addition to a strong international portfolio of exploration properties, the new company, called Denison Mines Corp., holds a 22.5% interest in the McClean Lake operation (**Figure 24**) and its associated reserves and resources, a 25.17% interest in the Midwest deposit (**Figure 24**), and the nearby, newly discovered Mae zone, as well as a 100% interest in the White Mesa mill in Utah. A new reserve and resource estimate for the Midwest deposit, 20 km west of the McClean Lake mine, suggested that it contains a reserve of 41.7 Mlb at 5.47% U_3O_8 and a resource of 42.9 Mlb U_3O_8 at 5.50%, as well as an economic nickel resource. At the Mae zone, 3 km north of the Midwest deposit, Denison's joint-venture partner and project operator AREVA continued to report promising drill intersections of 6.25% U_3O_8 over 7.1 m, 11.67% U_3O_8 over 7.7 m, and 1.14% U_3O_8 over 17.7 m. Most of the intersections occur at or just above the Athabasca unconformity, which ranges in depth from 200 m to 280 m. Intersections of 31.3 m at 3.21% eU_3O_8 and 23.2 m at 1.26% eU_3O_8 were reported from follow-up -60 to -65 drill holes.

In the southeastern part of the Basin, joint-venture partners Denison (75%) and JNR Resources (25%) continued work at Moore Lake (**Figure 24**). Step-out and along-strike drilling has expanded the length and width of the prospective Maverick zone, where a 10-m intersection of 4.03% U_3O_8, including 1.4 m at 19.96% U_3O_8, was reported in DDH ML-61. Recent highlights from the Maverick zone were: an intercept of 1.81% U_3O_8 over an 11.1-m interval, including 5.64% U_3O_8 over 3 m, in DDH ML-83; and 2.0% U_3O_8 over 7.75 m in DDH ML-100. In addition, drilling on the "527" and "525" zones northeast of the Maverick zone on the Moore Lake property has returned mineralized intersections.

Pitchstone Exploration Ltd. and its joint-venture partner SXR Uranium One announced that they had encountered widespread radioactivity near the unconformity at their Waterfound property, and drill hole WF07 contained a narrow intersection of 0.18% U_3O_8. They have also completed three holes on their Darby-Candle project, encountering weak radioactivity at Candle.

In another amalgamation, Vancouver junior Hathor Exploration Ltd. acquired Roughrider Uranium Corp. and the latter's interest in several properties. This includes the Russell Lake joint venture with Northern Continental Resources where a number of geophysical surveys, including a 2-D seismic survey, have been completed or are in progress.

Other junior companies have been actively exploring in the Athabasca Basin. The main focus of this activity has begun to shift from geophysical surveys to diamond drilling. Several companies have initiated or completed drill programs in the western Athabasca Basin, including Triex Minerals, Titan Uranium, ESO Uranium Corp., and Dejour Enterprises. Triex completed four holes at its West Carswell property. It is also active in the eastern Athabasca Basin at Mann Lake and Pasfield Lake. Titan has initiated drilling south of the Carswell structure, but has reported no results. ESO has encountered weak mineralization in two drill holes from the northwest Carswell structure. Dejour completed 15 drill holes in the western Basin, the majority of which reached basement.

Several new drill programs have been completed in the eastern Athabasca Basin. CanAlaska Uranium has completed several holes at its West McArthur joint venture with Mitsubuishi and has also commenced drilling at its Waterbury project near Waterbury Lake (**Figure 24**). Forum Uranium encountered weak mineralization at its Costigan Lake project, south of Key Lake (**Figure 24**). Strathmore Minerals completed eight holes at its Waterbury project, encountering an anomalous uranium intersection in one of the holes at 280 m below surface. Purepoint Uranium completed

12 drill holes at its Turnor Lake property and reported elevated radioactivity and promising alteration near the unconformity at 185 m.

Diamonds

Diamond explorers were expected to spend at least $85 million in 2006, nearly $30 million more than in 2005. Exploration has now expanded beyond the Fort-à-la-Corne District to include major exploration plays in southern and southwestern Saskatchewan, around the Primrose Lake Air Weapons Range in west-central Saskatchewan, between Amisk Lake and Cumberland House in the east-central part of the province, and in the Foster Lakes region on the Precambrian Shield. Advanced programs include: 1) Shore's ongoing pre-feasibility study of the Star Kimberlite; and 2) on the FALC-JV property, a stepped-up program of exploration, valued at $43.2 million, on the "Orion Cluster" of eight kimberlites.

STAR KIMBERLITE

The Star Kimberlite (**Figure 24**), at the southeast end of the Fort-à-la-Corne kimberlite field, consists predominantly of pyroclastic crater-facies rocks covering a footprint area of approximately 200 ha and ranging in thickness from 3 m to more than 607 m. Five eruptive events have been recognized within the Star Kimberlite; volcaniclastic kimberlite was deposited in Cretaceous Cantuar, Pense, and Early, Middle and Late Joli Fou time. Early Joli Fou kimberlite is volumetrically the most significant unit, and the underground bulk sampling focused primarily on this unit in the area of the feeder vent. The underground bulk sampling and pre-feasibility core drilling have identified interlayered pyroclastic and breccia facies within the Early Joli Fou kimberlite. Shore has obtained a geological modeling size estimate of the Star Kimberlite, including both its 100%-owned property and the portion that falls on the FALC-JV property. The Star Kimberlite is thought to contain 275.80 Mt of kimberlite to a depth of 350 m below surface, including all facies and reworked kimberlite debris-flow deposits. The Early Joli Fou kimberlite forms nearly 60% of the total volume. Early and Middle Joli Fou feeder vents are known to extend to more than 600 m below surface. This estimate will be further refined as more data are added to the model and will lead to completion of an NI 43-101-compliant resource estimate in 2007.

Shore commissioned a valuation study on a total diamond parcel of 5949.88 ct by three companies: R. Steinmetz and Sons N.V., Rio Tinto Diamonds N.V., and WWW International Diamond Consultants Limited (WWW). The average of their valuations was US$102/ct. Separate valuations were conducted by WWW on diamond parcels from each of the two Early Joli Fou kimberlite facies. The modeled value for the combined Early Joli Fou parcels was US$130/ct (taken as 70% pyroclastic and 30% breccia facies). Three of the six highest-value diamonds came from the Early Joli Fou kimberlite breccia, with the best being a 4.06-ct diamond with a value of US$3110/ct. A 5.41-ct stone from the pyroclastic kimberlite had a US$4400/ct value, and a 4.77-ct stone from the Cantuar kimberlite was valued at US$3430/ct. WWW also valuated a 572.29-ct parcel from the Cantuar kimberlite and determined a value of US$145/ct.

The final results from the Phase 2 underground bulk sampling program were received in mid-2006. A total of 18 272 t of kimberlite were collected, from which 19 918 diamonds weighing 3016 ct were recovered. In the last 22 batches sampled, the six largest diamonds were 8.23, 6.37, 5.86, 5.25, 5.04, and 4.86 ct. The average grade of the Phase 2 samples was 16.51 ct/ht, which compares well with the 16.32-ct/ht grade obtained from Phase 1. Shore announced further diamond results from a clean-up of Phases 1 and 2 underground bulk sample stockpile areas. A 1634.94 dry tonne sample yielded 466 commercial-sized diamonds (>1.18 mm) weighing 103.17 ct. The four largest diamonds in this sample included a 19.58-t stone that may have originally been a 24.50-ct broken octahedron crystal, as well as 15.30-, 3.97-, and 3.30-ct stones. In total, nine diamonds greater than 1 ct were recovered. A grade for this batch was not deemed appropriate because about 75% of the sample consisted of surface sand.

Shore began a Phase 3 underground bulk sampling project and a surface in-fill drilling program. The 2006 exploration budget had been increased to $60 million to accommodate Phase 3 work. Phase 3 underground was designed to obtain bulk samples of the Cantuar and Pense kimberlites. A ramp was being excavated from drift South 16 on the 235-m level to the 215-m level to complete eastward drifting out to the Pense kimberlite. Drifts South 9 and 11 will be extended southwestward out into the Cantuar kimberlite. To date, Shore has reported three sets of results. A total of 1858 diamonds were recovered totaling 334.43 ct from a 1908.92 dry tonne sample. The total average grade was 17.52 ct/ht with the four largest diamonds at 14.86, 8.68, 6.83 and 6.36 ct. The second sample totaled 2139.57 dry tonnes of kimberlite material and yielded 2856 diamonds weighing 340.42 ct at an average grade of 15.91 ct/ht. The four largest diamonds are 10.26, 6.62, 3.77 and 3.53 ct. The third 1989.40 dry tonne batch of kimberlite returned 2710 commercial-sized stones weighing 317.4 ct, with the four largest diamonds being 15.85, 4.64, 4.61 and 3.73 ct.

Another aspect of the pre-feasibility study is 60 large-diameter (LD) drill holes, 1.2 m in diameter, to obtain additional mini-bulk samples of the Early Joli Fou kimberlite from areas surrounding the underground development. The holes are spotted within 3 m of core holes that have been logged in detail. All underground and LD drill-hole samples are processed in the on-site dense media separator plant from which concentrates are batch-fed through an X-ray flow-sort.

FALC-JV

Shore's subsidiary, Kensington Resources, is now the operator of the FALC-JV (**Figure 24**). The joint-venture property covers 64 drill-tested kimberlite bodies ranging in aerial extent from 2.7 to 250 ha, based on geophysical modeling. The larger kimberlite bodies are commonly composite in nature and made up of multiple eruptive phases of mainly pyroclastic crater-facies deposits. Exploration activity over the past few years has focused on higher-priority kimberlites, including the 140/141, 148, and 122 kimberlites. The new focus is on a cluster of eight kimberlites, now referred to as the Orion Cluster, as well as the Star West portion of the Star Kimberlite.

The Orion Cluster comprises eight defined kimberlites that Shore geologists believe coalesced to form a 7-km-long zone of kimberlite. From south to north, the kimberlites include: Orion South – kimberlites 140/141 and 133; Orion Centre – kimberlites 145 and 219; and Orion North – kimberlites 120, 147, 148, and 220. Phase 1 of the Orion Cluster program includes: 220 PQ drill holes totaling 50 000 m on a staggered 200-m grid over the cluster in areas where current estimates indicate more than 50 m of kimberlite thickness, and 12 LD drill holes for 3000 m to target macrodiamond recovery in units identified by Phase 1 drilling and previous work. The core holes will be subject to detailed geological and geotechnical logging, whole-rock geochemistry, down-hole geophysics, microdiamond analysis, and geohydrological studies. Approximately 3750 t of kimberlite are expected to be recovered as mini-bulk samples from the LD drill holes. Based on positive results from Phase 1, an additional 40 PQ holes (8000 m) will be drilled to provide more detailed delineation of potentially economic kimberlite units. Star West core drilling included 18 PQ size holes totaling 4000 m; underground delineation drilling and underground bulk sampling of Cantuar kimberlite were being investigated.

In June, Shore announced microdiamond results from the 2005 core drilling program on 18 different kimberlites extending from Star West in the south to kimberlite 158, 15 km to the northwest. A total of 12.84 t of kimberlite were obtained from 140 HQ (63.5 mm) core holes, from which 10 328 microdiamonds (0.075-mm cut-off) were recovered. The results from the Orion Cluster and Star West were encouraging. The best was kimberlite 147, now part of Orion North, containing 4458 stones per tonne and 45 macrodiamonds (>0.5 mm to 1.18 mm).

OTHER DIAMOND EXPLORATION

Great Western Diamonds (GWD) completed a 2186-m, nine-hole, NQ-size drilling program on Candle Lake kimberlite C28, 80 km northeast of Prince Albert (**Figure 24**). Most of the holes had

multiple kimberlite intersections ranging from 4.7 to 111.0 m in thickness. The drilling has extended the kimberlite in all directions and its extent is still undefined to the north and south. Furthermore, GWD announced plans for a $22 million integrated core drilling, mini-bulk sampling, and pre-feasibility-style investigation program for the C29/30 kimberlite to be completed over a two-and-a-half-year period beginning in 2006. To the west, near the Alberta border, GWD acquired 588 000 ha (383 claims) in two blocks on the north and south flanks of the Primrose Lake Air Weapons Range. An airborne magnetic survey flown on the northern property identified six shallow magnetic targets similar in size and general signature to FALC kimberlites. Goldsource Mines Inc. has acquired a 458 000-ha property extending northwest from the original Sturgeon Lake kimberlite (**Figure 24**) to Cowan Lake, 100 km to the northwest. It has selected 17 targets, based on an airborne magnetic and electromagnetic (EM) survey, for follow-up drilling, mostly on targets that display similar geophysical signatures to FALC kimberlites.

There is also active diamond exploration in southern Saskatchewan. Madison Exploration holds a number of claims in southern and southwestern Saskatchewan. In February, it announced further delineation of three additional Keating anomalies on the two properties based on existing geophysical data. Madison defined three high-priority targets for drilling on the Bronco and Val Marie properties; however, two drill holes at the Val Marie property intersected no kimberlite, although they did identify anomalous igneous minerals in the sedimentary strata. Shear Minerals announced the acquisition of 235 mineral claims totaling about 300 000 ha southwest of Regina along the border with the United States. The claims cover areas in which coarse-grained kimberlite indicator minerals had been previously identified in government surveys. Shear has taken an additional 25 samples and recovered 6819 indicator minerals. The highest concentration of indicator minerals occurs near the centre of the property and decreases to both the east and west.

Gold

Strong gold prices in 2006 have continued to drive exploration. Although most of the exploration is focused in the La Ronge and Glennie domains, exploration programs have been undertaken in other parts of the province with known showings or past-producing mines.

Golden Band Resources Inc. continued its program of defining National Instrument 43-101-compliant mineral resources for a number of deposits it controls in the Waddy Lake area (**Figure 24**). The company hopes these deposits will provide feed for its wholly owned Jolu mill (**Figure 24**). Golden Band now has 100% ownership of the Golden Heart, Tower, Memorial, and Komis deposits (**Figure 24**), all in the Waddy Lake region, which have measured and indicated resources totaling 734 420 oz of gold. The estimate for the Bingo deposit, located about 70 km to the southeast of the others (**Figure 24**), was updated to an estimated indicated mineral resource of 22 900 t grading 13.8 g/t gold at a cut-off of 5 g/t over a minimum width of 1.3 m. An additional 136 500 t averaging 12.74 g/t gold is classified as inferred.

Golden Band has focused exploration at the EP zone (**Figure 24**), a narrow, high-grade deposit located 200 m east of the Komis deposit (**Figure 24**). It is hosted by subvertical extensional quartz veins and a sub-horizontal shear zone within a gently south-dipping, 2- to 5-m-thick intermediate dyke that intruded andesitic volcanic rocks. Sixteen recent vertical holes were drilled at 7.5-m spacing. Two of the holes returned grades of 316 g/t gold over 1.4 m and 271 g/t gold over 2.6 m. The Birch Crossing deposit (**Figure 24**) is located about 12 km west-southwest of the Komis deposit within the east-west-striking Byers fault zone. Birch Crossing was discovered by Golden Band as a very strong gold-in-till anomaly in 2003. Sixteen holes were drilled in February and March 2006 from which intersections grading up to 32.17 g/t gold over 2.2 m were encountered. Follow-up drilling was done this summer with results pending.

Wescan Goldfields has entered Phase III of its exploration of the Jasper deposit (**Figure 24**). The company completed 3600 m of drilling in 2006 to evaluate the potential of the Deep Jasper (DJ) zone. The DJ zone has now been tested by wide-spaced drilling over a strike length of 250 m and to

a vertical depth of 250 m. Two new gold-rich footwall zones, the JN Footwall zone and JN East zone, were also intersected. The new zones are parallel to and approximately 75 and 150 m east, respectively, of the DJ zone. Grades from the DJ zone are up to 32.99 g/t gold over 0.3 m.

GLR Resources contracted the services of Wardrop Engineering to write the feasibility report for its Goldfields project (**Figure 24**) and to review the NI 43-101-compliant resource estimate. The feasibility study indicated that a 4000-t/d operation at an estimated grade of 1.8 g/t gold would result in an annual production rate in excess of 60 000 oz. Wardrop calculated a revised mineral resource for the Box deposit, increasing it by 225 000 oz to 687 000 oz of gold using a cut-off of 0.5 g/t. In the summer, GLR announced a major drilling program on the Athona deposit in order to bring it up to NI 43-101 standards and include it in the feasibility study. Initial results from this drilling yielded grades from 1.01 g/t gold over 29 m, including 1.78 g/t gold over 10 m, to 1.61 g/t gold over 10 m, including 3.93 g/t gold over 3 m.

Claude Resources continued to evaluate the potential of targets near the Seabee mine. Up to 20 000 m of surface drilling was directed towards delineating the Porky Lake and Santoy Lake satellite deposits (**Figure 24**) along strike and down dip, as well as pursuing four new targets: Pigeon, Afgan, Fox/Shane, and Runway North. The Porky Lake deposit, located 3 km north of the Seabee mine (**Figure 24**), consists of shear zone hosted mineralization proximal to the hinge area of the regional Porky Lake anticline. The mineralized zone has been extended 500 m westward based on 4830 m of drilling in 17 new holes. The Santoy 7, Santoy 8, and 8 East zones are located about 14 km east of the Seabee mine. Mineralization is hosted in silica-rich shear zones with sulphide-chlorite-quartz veins and silicified granitoid sills. The 2006 winter drill program on the Shane property consisted of 12 diamond drill holes totaling 2940 m. Notable returns included 6.11 g/t gold over 2.87 m, 7.91 g/t gold over 4.16 m, and 8.21 g/t gold over 2.99 m. Three holes were drilled at Pigeon Lake to test the extent of the mineralized zone. One of the holes returned 9.4 g/t gold over 6.19 m true width. Claude's 2006 summer exploration program focused on definition drilling of the Porky West and Santoy 7 mineralized zones. Drilling was also planned for the Santoy 8 and Shane targets, and for other zones delineated by soil/rock geochemical sampling and prospecting.

Endurance Gold Corporation acquired the Simmie Gold project (**Figure 24**), comprising seven claims covering unconsolidated conglomerates and sands of the Miocene/Eocene Cypress Hills Formation. A 1990 regional geochemical survey by the Saskatchewan Research Council and Cameco in southwest Saskatchewan focused on mapping the distribution of kimberlite indicator minerals in surficial deposits. Gold grain counts were also done on all of the samples, which yielded up to 468 grains of detrital gold. Those values are anomalous when compared to the background value of 5-10 grains. The gold occurs in the sandy matrix of the Cypress Hill Formation conglomerates. Endurance planned a field program, including ground-penetrating geophysical surveys to map the basal contact of the conglomerate, followed by a program of large-diameter churn or reverse circulation drilling to determine the gold content of the basal horizon.

Base Metals

During 2006, base-metal exploration activities increased. The focus of much of this activity was in the Flin Flon VMS camp and to the west of there in the Hanson Lake area. Noritic sills of the Tantato Domain (Axis Lake and Currie Lake) and metasedimentary rocks of the Wollaston and the Kisseynew-Glennie domains (Brabant Lake and Anglo-Rouyn areas) were also being explored for base metals. Strong base-metal prices are expected to encourage additional exploration.

HudBay Minerals subsidiary Hudson Bay Exploration and Development (HBED) is a major explorer in and near the Flin Flon VMS camp and it operates several exploration projects in Saskatchewan. HBED signed a joint-venture agreement with Murgor Resources in July for three of its Saskatchewan properties. Included is the FON deposit (**Figure 24**), where HBED reported that hole Fon 448 contained 7.23% zinc (72.69 g/t silver) over 0.15 m, and hole Fon 457 contained 3.36% copper and 5.79% zinc (52.46 g/t silver) over 0.37 m. In addition, Murgor has optioned the

Abbot Lake deposit and TYR property. It plans to spend $3.8 million over four years on the three properties. Foran Mining reached an agreement with Copper Reef Mines (1973) Ltd. concerning the McIlvenna Bay deposit (**Figure 24**), and formed a joint venture for which Foran will be the project operator and hold a 75% interest. The zinc-rich McIlvenna Bay deposit (**Figure 24**), about 60 km west of Flin Flon, consists of massive and stringer sulphide zones conformably hosted by a variably altered felsic volcanic succession beneath the northern edge of the Phanerozoic cover. A new NI 43-101 resource estimate for McIlvenna Bay suggests an indicated resource of 6 671 000 t grading 0.87% copper, 6.51% zinc and 26 g/t silver, with an additional inferred resource of 6 000 000 t grading 0.83% copper, 5.89% zinc and 24.8 g/t silver.

In the Kisseynew Domain, Québec-based Manicouagan Minerals acquired the Brabant Lake zinc-lead-copper-silver deposit (**Figure 24**) from Boart-Longyear and is waiting for an NI 43-101-compliant report being done by MPH Consulting Limited to confirm the historic inferred resources at the property, which are not NI 43-101 compliant. The company plans to undertake an HLEM survey of the property and drill 3000 m this winter.

Winnipeg's Wildcat Exploration Ltd. (Wildcat) is exploring the metasedimentary rocks of the Wollaston Domain in the Foster Lake area for zinc mineralization. The company has completed detailed geological mapping and sampling, prospecting, and structural mapping of the known prospects. Wildcat hopes to discover Broken Hill-type zinc-lead-silver mineralization on the property. The property contains five lead-zinc showings, as well as copper and silver showings. Wildcat also expanded its ground position by staking two new claims in the Foster Lake area, which include the Robyn Lake and Mackie Lake showings.

Exploration for copper-nickel sulphide deposits in the Tantato Domain continued in 2006. The Axis and Currie lakes deposits (**Figure 24**) are hosted by noritic sills. Published historic resources are 3 402 000 t grading 0.60% copper and 0.60% nickel, and 47 536 t grading 0.79% nickel, respectively. After completing a VTEM survey that identified 40 anomalous areas, and a follow-up soil geochemistry survey in 2005, Red Dragon Resources optioned the property to Pure Nickel Inc. (80% earn-in interest) in May 2006. Pure Nickel has carried out 2342 m of a planned 4000-m drilling program. Widespread nickel-copper mineralization was intersected in all of the seven drill holes. The highest values were in hole No.1, which returned 0.92% nickel and 0.40% copper over 1.18 m.

Industrial Minerals

POTASH

Ten new subsurface mineral permits and one new lease were issued for potash exploration in 2006, with another dozen pending. These permits represent the start of the first new exploration for potash in over two decades. In May 2006, Anglo Minerals was in the process of completing a 3-D seismic survey over its Jansen Lake project area (**Figure 24**) near the Lanigan potash mine (**Figure 24**). In early June, the company announced that, through its wholly owned subsidiary Prairie Potash Corp. (PPC), it had entered into a joint-venture agreement with BHP Billiton (BHP) to carry out further investigation of the Jansen project. Under the agreement, BHP will pay PPC $3.8 million initially and can earn up to a 60% interest in the project by spending $40 million over the next 5.5 years to complete exploration and produce a feasibility study of the site. BHP will be operator of the joint venture and, upon completion, will pay Anglo an additional $10 million. Anglo has also contracted Wardrop Engineering to do a scoping study of the Jansen Lake area and investigate the cost of building a 2-Mt/y potash mine.

OTHER INDUSTRIAL MINERALS

GWM's wholly owned Hoidas Lake property, located about 60 km northeast of Uranium City, covers a 12-km-long belt of over 30 rare element showings (**Figure 24**). The property lies less than 10 km west of the regional-scale Black Bay Fault and contains a number of mylonite zones within

granitic, tonalitic, and migmatitic gneisses. The main target of exploration continues to be the JAK zone where, based on 92 drill holes, the mineralized zone has been extended to 750 m in length and to a depth of 150 m, and averages about 40 m in width. The zone is still open along strike and at depth. A number of other targets along the belt have only received minimal exploration thus far. In the fall of 2005, GWM contracted Wardrop Engineering Inc. of Ontario to prepare an NI 43-101-compliant resource estimate of the JAK zone based on all data available at that time. Wardrop released its report in March 2006 where it calculated a measured resource of 123 000 t grading 2.466 weight percent TREE (total rare earth elements) + yttrium (2.956% total rare earth oxides [TREO] + yttrium), with an additional indicated resource of 430 000 t at 2.305 weight percent TREE + yttrium (2.762% TREO + yttrium), and an inferred resource of 812 000 t at 2.039 weight percent TREE + yttrium (2.445% TREO + yttrium). GWM completed a 22-drill-hole program totaling 2233 m on the northern extent of the JAK zone. This drilling has served to expand the deposit and improve the grades. Examples from the drilling include the following intersections: from hole HL06-72, 9.80 m true width at 2.25% TREO, including 5.10 m at 3.51% TREO at a depth of 25 m from surface; hole HL06-76, 9.01 m at 4.48% TREO, including 6.40 m at 5.51% TREC at a depth of 30 m, and 5.49 m at 1.86% TREO at a depth of 45 m; and hole HL06-83, 12.86 m at 2.49% TREO, including 7.28 m at 3.36% TREO at a depth of 50 m.

In southern Saskatchewan, Whitemud Resources Inc. holds quarrying leases over the Gollier Creek kaolin deposit (**Figure 24**), near the village of Wood Mountain. Previous operators had outlined 400 Mt of kaolin-rich sandstone in the Cretaceous Whitemud Formation in four deposits in the Wood Mountain area. The company is focused on the production of meta-kaolin as a cement substitute. Whitemud plans to offer meta-kaolin to the marketplace at a price that will make it a much more competitive cement powder substitute. During the summer of 2006, Whitemud obtained environmental approvals for its project and carried out an undisclosed amount of drilling of the Gollier Creek deposit. In September, the company held a sod-turning ceremony at the Gollier Creek site and announced plans to construct a $50 million meta-kaolin processing plant and open-pit kaolin mine. Whitemud hopes to have the plant in operation by the second half of 2007.

The Bow River coal project, operated by Santoy Resources, is located southwest of Lac La Ronge (**Figure 24**) and east of Highway 2, about 21 km south of the town of La Ronge (**Figure 24**). Previous operators outlined a field 11 km long by 4.5 to 6.5 km wide containing 88.8 million tons of shallow lignite A coal. Santoy completed 16 vertical HQ diamond drill holes totaling 501 m with the intention of verifying coal and overburden thicknesses, as well as providing samples to test the thermal properties of the coal. Coal was intersected in 11 of the holes and up to eight coal seams were identified ranging from 0.1 m to 3.8 m thick.

Mineral Production

In 2005, Saskatchewan's mining operations produced commodities including potash, salt, coal, uranium, gold, silver, copper, zinc, sodium sulphate, silica sand, clay, and bentonite. Saskatchewan mineral production in 2005 generated $3.6 billion worth of sales. In 2006, the value of mineral sales is projected to be less, reflecting a projected decrease in potash sales. Saskatchewan was the fourth largest non-fuel mineral producer in Canada behind Ontario, British Columbia and Québec in 2005.

Industrial Minerals

Industrial minerals are a substantial component of the non-renewable resource sector in Saskatchewan. They have consistently accounted for between 20% and 50%, and rarely up to 80%, of the gross value of provincial mineral production during the past 30 years. Not including coal, the four major products are potash, salt, sodium sulphate, and aggregate, with minor production in structural clay, silica sand, clinker (a naturally fired brick made from mudstone), and bentonite. Potash production, from eight underground operations and two solution mines, set an all-time high in 2005 at 16.7 Mt, 5% more than 2004's production of 15.8 Mt. The total value of industrial mineral production in 2004 was $2.2 billion and increased to more than $2.7 billion in 2005.

Uranium

Uranium mining and milling continued at three operations throughout 2006. These include the Eagle Point mine with ore processed at the Rabbit Lake mill, the McArthur River mine with ore processed at the Key Lake mill, and the McClean Lake mine with stockpiled and mined ore processed at the Jeb mill. Industry forecasts uranium production for the year to total 28.6 Mlb of U_3O_8, which is slightly lower than in 2005. Construction at Cigar Lake has been hampered by two separate floods, but remediation of the mine is currently under way. Global uranium industry leaders Cameco and AREVA operate all of the aforementioned mines and processing facilities.

McARTHUR RIVER MINE/KEY LAKE MILL

The McArthur River mine is owned by Cameco Corporation (69.805%), as the operator, and AREVA (30.195%). The two companies also own the Key Lake mill, which is also operated by Cameco. Cameco holds an 83.333% interest and AREVA owns the remaining 16.667%.

McArthur River (**Figure 24**) is the largest high-grade uranium deposit in the world with proven and probable reserves at the end of 2005 of 389.1 Mlb U_3O_8 at an average grade of 24.3% U_3O_8. Grades within the orebody reach 70% U_3O_8 locally, and composite grades of 30% U_3O_8 over several metres in thickness are common. Uranium ore is structurally controlled by the P2N fault, which dips 45° to 60° to the southeast and has a 70-m average vertical offset of the Athabasca Group unconformity. Ore is hosted within Athabasca Group sandstone and basement pelitic gneiss of the Wollaston Supergroup.

In 2005, the McArthur River/Key Lake operations produced their licensed production capacity of 18.7 Mlb U_3O_8. Production was again expected to reach capacity in 2006. Cameco has applied for an increase in annual licensed capacity at the Key Lake mill (**Figure 24**) to 22 Mlb from the current 18.7 Mlb U_3O_8.

RABBIT LAKE-EAGLE POINT MINE

In 2005, production from the Eagle Point mine (fully owned and operated by Cameco Corporation) was 6.0 Mlb U_3O_8 (**Figure 24**). The production estimate for 2006 was 5.9 Mlb of U_3O_8. The Rabbit Lake facility is now the longest-running uranium mining-milling operation in Saskatchewan. Reserves as of December 31, 2005, were 11 Mlb U_3O_8. This ore is targeted to feed the mill facility until the start-up of the Cigar Lake mine.

McCLEAN LAKE

In 2005, the McClean Lake operation (AREVA, operator [70%], Denison Mines Inc. [22.5%], and OURD (Canada) Co. Ltd. [7.5%]) produced 5.49 Mlb of U_3O_8 from newly mined Sue A ore and stockpiled ore from the Sue C deposit. As of December 2005, reserves, including both stockpiled and in situ ore, were 12.7 Mlb of U_3O_8 with an average grade of 0.8%. Resource estimates for the Caribou Lake pod, Sue D, and McClean North suggest an additional 23.6 Mlb of U_3O_8.

CIGAR LAKE

Cigar Lake (**Figure 24**) is the world's second largest high-grade uranium deposit with total proven and probable reserves of 231.5 Mlb of U_3O_8 at an average grade of 19.06% U_3O_8. Total inferred resources are 118.2 Mlb of U_3O_8 at an average grade of 16.92% U_3O_8. Cigar Lake is owned by Cameco Corporation, operator (50.025%), AREVA (37.100%), Idemitsu Uranium Exploration Canada (7.875%), and TEPCO Resources Inc. (5.0%). In December 2004, the Canadian Nuclear Safety Commission (CNSC) granted a full construction licence. Construction began on January 1, 2005, and was expected to take 27 months. In early April 2006, water inflow from a drill hole flooded the second shaft, which is used for underground ventilation, and set back the mine start-up

date. A second influx of water in late October 2006 flooded the mine's underground workings. Initial remediation of the mine has begun and Cameco will reassess the mine's production timetable and capital costs. Once production commences, it will be ramped up over a period of three years before full production levels of 18 Mlb/y of U_3O_8 are reached.

Gold

Claude Resources' 100%-owned Seabee mine (**Figure 24**), located 120 km north-northeast of La Ronge in the central part of the Glennie Domain, is the only producing gold mine in Saskatchewan. In 2005, the mine produced 44 600 oz of gold from 236 000 t of ore at a grade of 6.32 g/t. In the first nine months of 2006, the mine processed 186 700 t of ore grading 6.42 g/t gold to produce 36 100 oz, a 22% improvement from 2005. The projected production for 2006 is 48 000 oz. The proven and probable reserves at the Seabee mine, as of the beginning of 2006, were estimated to be 684 000 t grading 6.55 g/t gold (diluted). Additional inferred resources at the mine amount to 1 500 000 t grading 8.86 g/t gold. As of the end of September 2006, the mine's total gold production since opening in 1991 has reached 742 000 oz of gold from 3 130 000 t of ore with an average grade of 7.85 g/t.

Base Metals

Saskatchewan base-metal production was from a limited amount of stockpiled Konuto Lake copper and zinc ore. Silver was a by-product of this production.

Saskatchewan Crown Land Tenure Activity

In 2006, new dispositions totaling 3.8 Mha were issued in Saskatchewan. A total of 6245 dispositions covering 11.2 Mha are now active in the province. Of this, 2984 dispositions covering 8.5 Mha were active in the northern, unsurveyed part of the province and a further 3261 dispositions covering 2.7 Mha were active in the southern surveyed part of the province. The majority of dispositions in the north are related to uranium exploration in the Athabasca Basin region, while most of the dispositions in the southern part of the province are related to diamond exploration. Very few mineral dispositions in the Athabasca Basin region have lapsed this year as interest in this region continues to expand. While a significant area of dispositions in the surveyed part of the province in the Fort-à-la-Corne region have lapsed, the amount of land under disposition in the surveyed part of the province continues to increase as a result of new diamond exploration plays in other geographic areas.

Government Incentive Programs

Saskatchewan Mineral Exploration Tax Credit (SMETC)

In December 2001, Saskatchewan introduced a new temporary 10% tax credit for flow-through-share investors of eligible mineral exploration companies. The program paralleled the federal 15% Investment Tax Credit for Exploratin (ITCE). The intention of the program was to stimulate grass-roots mineral exploration, principally for metallic minerals (including diamonds). The non-refundable tax credit applied to eligible exploration expenses incurred on or after October 18, 2000, and before January 1, 2006. While there have been a number of administrative challenges, the SMETC was popular with industry and exceeded the projected $300 000 annual allocation. Companies applying for permission to issue the tax credit were primarily focused on diamond and uranium exploration.

Saskatchewan Mineral Exploration Incentives

In September 2002, the Saskatchewan government announced a six-year, $12.6 million package of mineral exploration incentives that included:

- the Prospectors Incentive Program ($100 000/year);
- the Corporation Exploration Incentive Program ($1.1 million/year);
- enhanced geoscience funding ($400 000/year) – multi-parameter airborne geophysics;
- a 10-year royalty holiday for new gold and base-metal mines;
- the development of a competitive diamond royalty and tax structure; and
- a fuel tax rebate.

Corporation Exploration Incentive Program (CEIP)

This program offers reimbursement of up to 25% of approved eligible expenditure to a maximum of $100 000 per applicant, with a maximum of one approved project per applicant per year upon approval of a technical report and expenditure statement. In the 2005/06 program year, 25 companies with projects totaling $19 million accessed this program. Due to oversubscription in every year except the first, funding to companies has always been prorated. For the 2005/06 program, each company received approximately 50% of the amount for which they were eligible. Prior to the opening of the 2006/07 program, changes were made to *The Mineral Exploration Incentive Regulations* that excluded the Athabasca Basin and the Fort-à-la-Corne kimberlite field from the area eligible for grants. This was done as it was evident from the high levels of exploration activity in both areas that government incentives for exploration were no longer needed there. Furthermore, the budget for the CEIP was reduced from $1.1 million to $550 000 in accordance with this apparent reduced need for direct government incentives for exploration. For the 2006/07 program year, there are 19 applicants with proposed exploration budgets totaling $24.5 million and an expected prorating of about 28%. Exploration programs are targeting a diversity of minerals over a wide geographic area of the province.

Prospectors Incentive Program (PIP)

This program offers reimbursement of up to 50% of approved eligible expenditures to a maximum of $7500 per applicant, with a maximum of one approved project per applicant per year upon approval of a technical report and expenditure statement. This program has never been fully subscribed, possibly because of the small number of prospectors active in the province and the predominance of uranium and diamond exploration programs that typically utilize geophysical over prospecting methods. In 2005/06, 11 PIP projects totaling $186 000 were completed and received $77 000 in funding. For the 2006/07 program year, nine applications for projects totaling $143 600 of exploration have been approved.

The undersubscribed portion of the 2005 program was used to assist in the development and implementation of a Mineral Exploration Technician Program run early in the winter of 2005/06 in partnership with the exploration industry and educational institutes in northern Saskatchewan. The successful five-week course, which was based out of the Key Lake mine, assisted in addressing both the shortage of available skilled exploration technicians and the need to increase the direct benefit to northern Saskatchewan residents of increased exploration activity there. Most of the 16 graduates of the course are now employed in the exploration sector.

2.9 ALBERTA[21]

Exploration Activity

The following text reviews exploration activity in Alberta on a commodity or commodity-group basis. Statistics on claims staked and assessment work filed are presented in **Table 14**.

Energy Minerals (Uranium, Thorium)

During 2004 and 2005, several million hectares were staked for uranium, mainly in the northeast and southern parts of Alberta. In the northeast, unconformity-type and vein-type uranium deposits are the target, whereas in southern Alberta sediment-hosted uranium deposits are the target.

During 2006, several companies have been actively exploring the Alberta portion of the Athabasca Basin, which in Saskatchewan hosts several large and important uranium mines and as-yet undeveloped deposits. Some of the active companies include Canalaska Ventures Ltd., Triex Minerals Corporation, Red Dragon Resources Corp., and Strathmore Minerals Corp. Several of these companies report they have flown large airborne combined electromagnetic (VTEM®, MegaTEM® or GEOTEM®) and magnetic surveys to define potential targets for unconformity-type uranium deposits. As well, Canalaska Ventures Ltd. has conducted a detailed marine seismic survey over portions of western Lake Athabasca to assist in the refining of targets. Each survey is reported to have resulted in several targets that will or may require drill testing. As yet, no follow-up drill results have been announced.

North of Lake Athabasca, several companies have been exploring for either vein-type deposits, similar to those that exist in the Beaverlodge District in northern Saskatchewan, or for unconformity-type deposits along the northwesternmost limit of the Athabasca Basin. Some of the active companies include North America Gem Inc., Strathmore Minerals Corp., and Bard Ventures Inc. At least two of these companies report that they have or will be conducting airborne combined

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[21] The Alberta review of activities was prepared by Alberta Geological Survey (Alberta Energy and Utilities Board) staff with the assistance of Alberta Department of Energy staff. For more information, the reader is invited to contact Dr. Reg Olson by telephone at 780-427-1741 or by e-mail at reg.olson@gov.ab.ca.

TABLE 14. CLAIMS STAKED AND ASSESSMENT WORK FILED IN ALBERTA, 2002-06

Activity	2002	2003	2004	2005	2006
Claims staked (permits (1) applied for)					
Number of applications (no.)	522	322	533	577	423
Total area (Mha)	4.1	2.9	4.7	5.1	3.4
Permits in good standing					
Number of agreements (no.)	1 409	1 276	866	1 124	1275
Active hectares (Mha)	11.2	10.2	6.3	8.2	9.6
Mineral assessment reports filed					
Number of reports (no.)	14	10	24	10	34
Number of permits represented (no.)	203	44	184	40	291
Hectares represented (Mha)	1.4	0.2	1.2	0.2	1.8
Expenditures filed ($ millions)	11.8	0.6	0.9	0.7	6.5
Leases in good standing					
Number of agreements (no.)	146	153	189	194	200
Total area (Mha)	73 049	77 084	157 864	167 939	169 343

Source: Alberta Geological Survey, Alberta Energy and Utilities Board.
(1) In Alberta, mineral claims for exploration are called metallic and industrial mineral permits.
Mha Millions of hectares.

electromagnetic-magnetic-radiometric surveys during 2006, coupled with ground prospecting, sampling and geological examinations. As yet, no details with respect to results of this work have been reported.

In southern Alberta, the area staked for uranium stretches from just south of Calgary south to the Pincher Creek area, and then east to the Cypress Hills in southeastern Alberta. Staking and exploration in southern Alberta are "complicated" because of the extensive free-hold mineral rights that have resulted in a "checker-board" pattern with respect to the mineral claims granted by the Alberta government. As a result, companies have to make deals with individual free-hold mineral rights owners if they wish to continuously explore belts of favourable geology.

Some of the companies who were actively conducting preliminary reconnaissance exploration in 2006 include Firestone Ventures Inc., North American Gem Inc., Strathmore Minerals Ltd., Solitaire Minerals Corp., and Marum Resources Inc. To date, the main exploration activity has been reconnaissance prospecting, rock and water-well sampling, geological examinations and, at least in one case, a small-scale Track-Etch cup survey. A few radioactive occurrences or radiometric anomalies have been discovered, and at least two companies have conducted follow-up drill programs during either late 2005 or in 2006. Marum Resources reported the drilling of 19 reverse-circulation holes on its Fort Macleod property. None of the drill holes intersected the target sandstone and no anomalous radioactivity was found in the overburden. In December, Marum optioned its southern Alberta holdings to Firestone Ventures. Finally, during 2006, the Energy Utility Board/Alberta Geological Survey (EUB/AGS) initiated a reconnaissance geological program intended to provide information about the potential for sedimentary-hosted uranium deposits in southern Alberta.

Diamondiferous Kimberlites

Since the discovery of diamondiferous kimberlites in northern Alberta in 1997, it is estimated that at least $100 million has been spent on exploration for diamondiferous kimberlites within the province. Much of this expenditure has been in northern Alberta where some 48 kimberlites have been discovered to date, including a total of 38 pipes in the Buffalo Head Hills area. Mini-bulk samples have been collected from 5 of the 38 pipes in the Buffalo Head Hills and the reported diamond grades range from about 4.4 ct/ht up to 55 ct/ht in kimberlite pipe K252, with a particular breccia from this pipe having an estimated grade of 85 ct/ht. Some of the companies actively exploring for diamonds in Alberta in 2006 include Ashton Mining of Canada Inc. (in a joint venture with Encana Corporation and Pure Gold Minerals Inc.), Grizzly Diamonds Ltd., Stornoway Diamond Corporation, Diamondex Resources Ltd., Shear Minerals Ltd., and Carina Resources Corporation.

In the Buffalo Head Hills, Ashton has recently announced that it has agreed with its partners to amend their joint-venture agreement to permit Ashton to increase its percentage ownership from 45% to 72.5% by funding exploration of $15 million from 2006 to 2010. To do this, Ashton plans to take a 200-t bulk sample from the K14 pipe, drill delineate the K91 pipe for possible bulk sampling in 2008, and continue to drill a number of untested geophysical targets. The joint-venture partners base the ramped-up evaluation on pipes K14 and K19 having less than 15 m of overburden, on the pipes having large near-surface dimensions (greater than 5 ha and likely much larger), and on initial diamond results. For example, kimberlite pipe K14 initially yielded 12 ct/ht from a 479-t bulk sample and pipe K91 yielded 13 ct/ht from a 36-t sample.

Interestingly, in 2006, exploration for diamonds has also been focused or re-focused on several other areas in Alberta. For example, in the Birch Mountains and Buffalo Head Hills areas, Grizzly Diamonds conducted airborne geophysical surveys, follow-up ground exploration, and drilling at several targets, and stated its plan to collect a mini-bulk sample from the Legend kimberlite pipe. In the Pelican Mountains (which lie south of the Birch Mountains) and in northwesternmost Alberta, Stornoway acquired large blocks of ground and reported plans to conduct airborne geophysical surveys and diamond indicator mineral sampling. The Pelican Mountains are directly up-ice of the Calling Lake area, which has yielded the best-known diamond-indicator chemistry in Alberta to

date, including one macrodiamond found in basal till along the Calling River. In east-central Alberta near Cold Lake, Diamondex has completed 31 000 line-km of high-resolution airborne magnetic surveys (HRAM) over its large land package of three million acres and in 2006 plans to conduct follow-up work, including ground geophysical surveys, diamond indicator mineral sampling of surficial materials, and drill testing of selected targets. At the Piche Lake area in east-central Alberta, Shear Minerals has completed a 14 760-line-km airborne magnetic survey to follow up on eight high-priority targets that were identified from seismic data, and in the Peace River area west of the Buffalo Head Hills, United Carina Corporation, in a joint venture with Star Uranium Corporation, has conducted follow-up work on anomalous kimberlitic indicator minerals found in overburden near circular geophysical targets that were discovered during prior exploration campaigns. The joint-venture partners plan to drill test several of these targets.

Precious, Base and Ferrous Metals

During 2006, there was little reported exploration activity for precious metals within Alberta. However, with respect to base metals, there was a mini-staking rush in northwestern Alberta near Zama Lake as a result of a joint EUB/AGS-Geological Survey of Canada (GSC) release in early 2006 that identified several sites with anomalous sphalerite grains in overburden. Some of the companies that acquired ground were Star Uranium Corporation and Stornoway Diamond Corporation, as well as a number of individuals or consultants (assumed on behalf of clients). Star Uranium reported that it had re-sampled many of the sites with anomalous sphalerite grains reported by the EUB/AGS-GSC and confirmed the prior results. Star Uranium suggested that the sphalerite grains were not transported, but are related to a proximal bedrock source relating to hydrothermal fluid remobilization of minerals from underlying lead-zinc-bearing carbonate strata into the overlying shale bedrock and till. A fall 2006 airborne geophysical survey and overburden drilling program was planned by Star Uranium; however, as yet, no follow-up results have been reported.

With respect to iron in southwestern Alberta, Micrex Development Corp. continues to conduct exploration on its land package that encompasses the Burmis magnetite deposits and prospects. In May 2006, Micrex reported that recent petrographic and scanning electron microscope work done by the Saskatchewan Research Council indicates there is both a detrital and hydrothermal component for the titanium- and zirconium-rich minerals within and immediately adjacent to the magnetite-bearing sandstones. Micrex planned follow-up drilling in the latter part of 2006 to continue to test the detrital paleoplacer magnetite zones, and also to test those portions of the Burmis area to assess the hydrothermal overprint. As well, Micrex will continue to carry forward on permitting the magnetite as a stand-alone project with the intent to produce magnetite for coal beneficiation. The company noted that recent drilling of 45 reverse-circulation holes indicates that at least one area of the Burmis magnetite deposit yields an average grade of 29.3 weight percent of magnetic minerals over an average thickness of 5 m.

In northwestern Alberta, exploration for iron was conducted to test selected parts of the Clear Hills ooidal ironstone zones that exist in the relatively flat-lying Late Cretaceous Bad Heart Formation sandstones. In early to mid-2006, General Properties Ltd. of Calgary, Alberta, entered into an agreement to acquire 100% of the issued and outstanding shares of Clear Hills Iron Ltd. and Peace River Energy Ltd. from CaNev Resources Corporation, a Nevada corporation. The Clear Hills iron property consists of mineral permits encompassing a total of 213 206 ha (approximately 831 square miles) in the Clear Hills northwest of Peace River. General Properties initiated a drilling program during August 2006 to complete up to about 50 holes to an average depth of 100 m in the Rambling River basin area of the property. As yet, no results from this drilling have been reported. The EUB/AGS has been gathering data on iron and coal resources in the Peace River region between 2004 and 2006, and continues to release reports on the results of the studies.

Industrial Minerals and Coal

The primary industrial mineral of importance produced in Alberta is limestone (for cement, lime and crushed stone). In 2005, limestone had a production value of about $900 million. Lafarge North America, Lehigh Inland, and Graymont Western Canada Inc. are among Alberta's largest diversified suppliers of limestone. In addition to limestone, there has been an increase in Alberta's crushed stone aggregate production to supplement the large and increasing demand pressure on sand and gravel (granular) aggregate. All aggregate suppliers, including major producers such as Burnco Rock Products Ltd., Lafarge North America, and Lehigh Inland (Inland Aggregates), are within a major production and sales period. Birch Mountain Resources Ltd., which opened its Muskeg Valley Quarry north of Ft. McMurray in 2005, continues to supply crushed stone aggregate for use on various oil sands properties in northeastern Alberta. Sulphur, as a by-product from oil and gas production, ranks third with respect to the production of nonmetallic minerals in Alberta. Other industrial minerals or products include salt, silica sand, building stone, clay products, and the gemstone ammolite.

Titanium Corporation Inc. continued to evaluate the potential to recover heavy minerals from the oil sands tailings of Syncrude Canada Ltd. In November 2006, the company announced it had completed the first phase of its 2006 pilot program to isolate a heavy minerals concentrate. It is now beginning the final stage of the pilot program to optimize recovery and separation of zircon minerals from the heavy minerals concentrate at its processing facility in Regina. The company expects to finalize the results of its pilot program during the first quarter of 2007, focussing its project development on zircon production. Titanium Corporation is targeting commercial operations for 2008/09.

Coal continues to be important to Alberta's economy for both (a) bituminous metallurgical, bituminous thermal, and subbituminous thermal coal, and (b) as a source for coal-bed methane (CBM) production. There are 11 operating coal mines in Alberta producing about 30.6 million raw tonnes of coal annually. With respect to CBM, approximately 6000 CBM wells have been drilled in Alberta to date, with about 3000 of them drilled in 2005, and approximately 3500 CBM wells are planned to be drilled in 2006.

Additional Information

Additional information about the geology and mineral resources of Alberta can be found on the Alberta Geological Survey's web site at www.ags.gov.ab.ca.

2.10 BRITISH COLUMBIA[22]

Summary and Outlook

At a forecast $265 million in exploration spending in 2006, British Columbia has not only increased expenditures by 22% over 2005 (**Table 15**), but has also witnessed the largest exploration expenditures over the past quarter century of recorded history. At this level of spending, the province is more or less tied in second place with Québec and is less than 25% below exploration spending in Ontario.

In 2006, the growth in exploration activity, as with most parts of the mining world, was spurred on by high mineral prices, which moved to even higher levels during the year. An additional boost within the province itself came from British Columbia's increasingly favourable regulatory regime.

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[22] The British Columbia review of activities was prepared by Jim Lewis. For more information, the reader is invited to contact Mr. Lewis by telephone at 250-952-0521 or by e-mail at jim.lewis@gov.bc.ca.

TABLE 15. EXPLORATION EXPENDITURES IN BRITISH COLUMBIA, 1997-2006

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006 (f)
Spending ($ millions)	115	55	41	36	29	39	63	152	218	265 (1)
Percent change (%)	..	-53	-24	-13	-19	+35	+59	+143	+44	+22

Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
.. Not available; (f) Forecast of intentions.
(1) Based on British Columbia's Ministry of Energy, Mines and Petroleum Resources survey of exploration which, by memorandum of understanding with Natural Resources Canada, is temporarily used as early estimates.
Notes: All figures include exploration and deposit appraisal (and exclude mine complex development). In addition to field work and overhead expenditures, statistics include engineering, economic and feasibility studies, environmental and land access spending. All statistics (except 2006 - see note 1) are referenced from the official federal-provincial/territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures. The official statistics from this survey are the source for Statistics Canada's National Accounts.

In addition to exploration spending, other growth factors in the province's mineral economy were significant. The total sales value of the minerals mined is estimated at $6 billion for 2006. This is double the sales value in 2003 and up 20% from those in 2005. More than 10 000 people are employed in mining and an additional 2000 people (full-time-equivalents) are employed in exploration. More importantly, six mines went into operation over the past three years, 30 development projects are either in or through the mine permitting process, and an additional 35 projects have progressed to the point where they are considered advanced projects at the pre-feasibility stage or better (**Table 17**).

In 2007, with or without the advent of a downturn in mineral prices, exploration is expected to remain reasonably robust. Even with significant declines, prices are anticipated to remain well above the averages of the decade to date. Exploration and mining companies are well financed to further their work in 2007 and Asian partners have recently made investment commitments to several coal and metal projects. British Columbia is focused on moving a number of the "ready-to-go" mine development projects to fruition. On achieving this, if there is a slump in the world economy, the province's new and previously established producers, along with the large number of advanced exploration projects, will sustain its growth momentum over the longer term. If the boom in Chinese and other Pacific Rim countries' demand continues, then British Columbia is strategically placed, as the only Canadian West Coast exporter of minerals, to become a "preferred mineral supplier" to more than half the world's population.

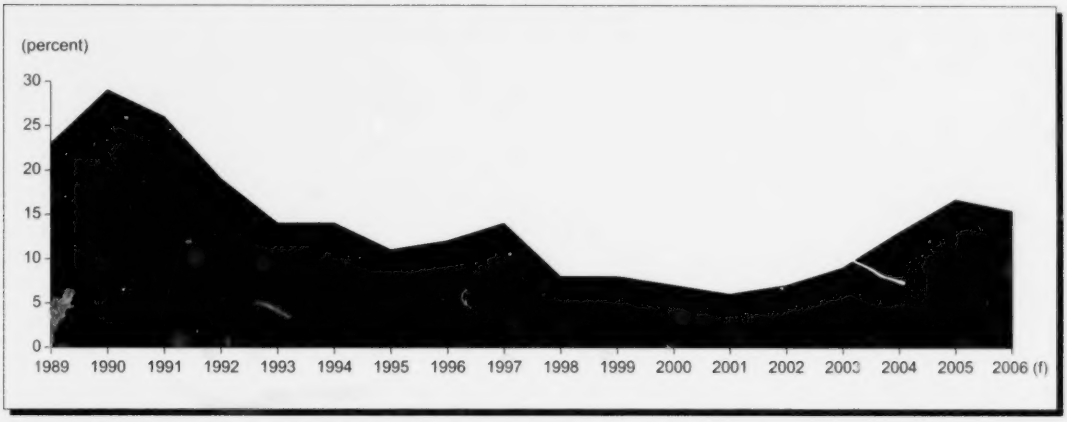
Provincial government initiatives have shown some success in recent years as indicated by British Columbia's increased share of Canada's exploration. Note that trends of both decreases in exploration spending (see percent changes in **Table 15**) from 1997 to 2001 and increases in spending from 2001 to 2006 are closely correlated with British Columbia's falling, then rising share of Canadian exploration (**Figure 25**). While this change in trend is partly the result of the strengthening and expected long-term demand growth from Pacific Rim countries, it also indicates that the provincial government is showing signs of success with its efforts to provide an attractive regulatory regime that favours exploration and mining development.

In addition, **Figure 25** shows British Columbia's relatively rapid climb, in just four years, to a 15% share of Canada's exploration spending in 2005. This level has not been achieved since 1992. While there is a slight decrease in share forecast for 2006, this is still a preliminary forecast and the final 2006 figure is expected to remain comfortably above the significant 15% mark.

Government Initiatives

During 2005-06, the provincial government took initiatives to stimulate growth in exploration and mining in British Columbia. *The British Columbia Mining Plan*, published in 2005, set a focus on enhancing global competitiveness, building capacity in rural and First Nations communities, ensuring access to land, and protecting workers and the environment. The following points list some of the actions completed:

Figure 25
British Columbia's Exploration Expenditures as a Percentage of Canada's Total Expenditures, 1989-2006



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast of intentions.

Trade Missions

- The Minister of State for Mining led joint industry-government trade missions to China and Toronto. In China, the China Mining Congress provided a forum that successfully highlighted national-international investment in exploration and mining in British Columbia.

- The Minister of State also led a trade mission to Ottawa to meet with federal government representatives and address a process for accelerating mine development opportunities.

- Provincial exploration and mining were further promoted through meetings with numerous offshore delegations and through marketing projects to attract investment that took place in Denver, Toronto and Vancouver.

Economic Initiatives

- The 10-year extension of the Mining Exploration Tax Credit, which is a 20% refundable tax credit to companies undertaking eligible grassroots mineral exploration in British Columbia, continues. This initiative positions British Columbia amongst the top rank of Canadian jurisdictions offering exploration tax incentives.

- Mineral Titles Online has successfully increased staking activity in British Columbia for two years running. Clients have benefited from Internet map selection, which eliminates the physical effort and costs involved in claim staking.

- Infrastructure development work focuses on exploration and mining access roads, power-grid extensions, and collaboration with the federal government and rail and port authorities to ensure that British Columbia remains the Pacific Gateway for mineral exports.

Jobs, Training, and First Nations' and Rural Communities' Capacity Building

- Provincial job fairs were organized to provide information on job opportunities and career options in the mineral exploration and mining industries. The participation of First Nations and rural communities was actively promoted.

- An additional $2.3 million was invested to expand training for youth from rural and Aboriginal communities so that they can pursue careers in British Columbia's mining and mineral exploration industry.

- The signature of a mining consultation agreement with the Upper Similkameen Indian Band ensures consultation prior to mine development in traditional band territory. This should both expedite and set a positive precedent for mine development in an environmentally and culturally sustainable manner.

- The appointed coal director continued to focus on working with First Nations and industry to facilitate the development of new coal projects.

Geoscience Initiatives

- The British Columbia Geological Survey expanded geoscience-based knowledge for the province by:

  - completing geoscience surveys in the northwest VMS and rift areas, the Terrace area, the northeast coal region, mountain pine beetle infested areas within central British Columbia, the Spences Bridge Gold Belt, the northern Vancouver Island area, the Canim Lake area, and the Boundary district;
  - furthering economic geology studies on porphyry copper deposits in the Quesnel arc and on industrial minerals;
  - significantly upgrading and expanding, as well as making more accessible to clients, the MapPlace, MINFILE, CoalFile and Assessment Report databases (www.em.gov.bc.ca/geology). Clients can now access over 96% of company mineral assessment reports from the ARIS database on-line for the years from 1947 to the present;
  - publishing many reports and maps. All publications are routinely posted to the Ministry of Energy, Mines and Petroleum Resources web site at www.em.gov.bc.ca/Mining/Geolsurv/publications.

- Geoscience BC also expanded geoscience-based knowledge for the province by:

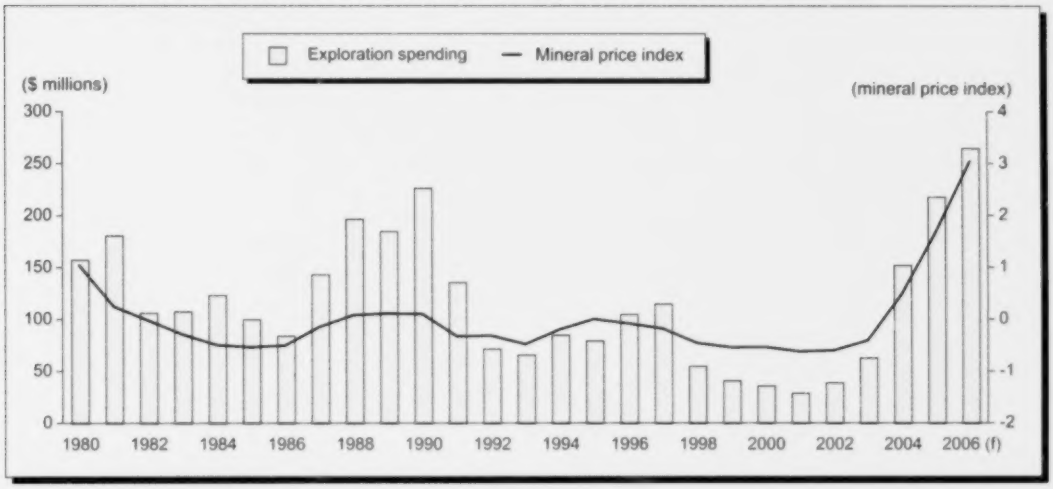
  - forging new partnerships with industry and government agencies to complete a wide variety of projects designed to attract mineral, and oil and gas investment to British Columbia;
  - releasing results from airborne gamma-ray spectrometer and magnetic surveys over the Bonaparte Lake area in south-central British Columbia;
  - contracting an aeromagnetic geophysical survey over the Jennings River area in northern British Columbia. Results will be released in early 2007.

Statistical Trends in British Columbia's Exploration Sector

Rapid escalation in mineral commodity prices over the past four years has been the biggest driver of increased exploration spending in British Columbia. This is verified in **Figures 26** and **27**, and **Table 16**. **Figure 26** shows the high correlation between exploration spending and British Columbia's mineral price index. The price index is comprised of the prices of the main minerals explored for and mined in British Columbia (i.e., metallurgical coal, copper, molybdenum, gold, silver, zinc and lead).

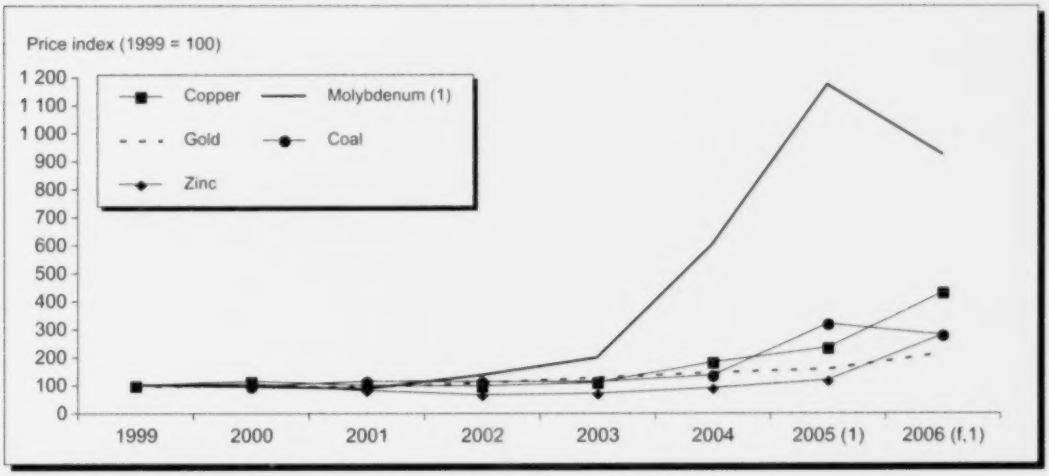
The extraordinary increases in both the price index and exploration spending since 2003 need some explanation when compared to the relatively less-sustained changes in exploration spending during the prior quarter century from 1979 to 2003. The consensus of world analysts has attributed this run-up in mineral prices to the extraordinary Chinese demand for minerals at a time when the world's inventory of quick-start-up mine inventories was particularly low.

Figure 26
Annual Exploration Expenditures and British Columbia's Mineral Price Index, 1980-2006



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.
Note: Exploration expenditures for 2006 are based on a revised forecast of intentions.

Figure 27
Mineral Commodity Price Levels, 1999-2006 (1999 = 100)



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.
(1) The index value for molybdenum is 601 in 2004, 1172 in 2005, and 923 in 2006.

Further evidence of these extraordinary price increases, which have had a beneficial impact on British Columbia, is shown in **Figure 27** and **Table 16**. The five minerals shown account for over 90% of the production value and exploration spending in the province. **Figure 27** illustrates the extraordinary run-up in prices for all five of these mineral commodities, while **Table 16** documents their numeric increases. All five commodity prices have more than doubled since 2001; copper is up over four times and molybdenum by more than ten times.

TABLE 16. INCREASES IN THE PRICE OF SELECTED MINERAL COMMODITIES, 2001-06

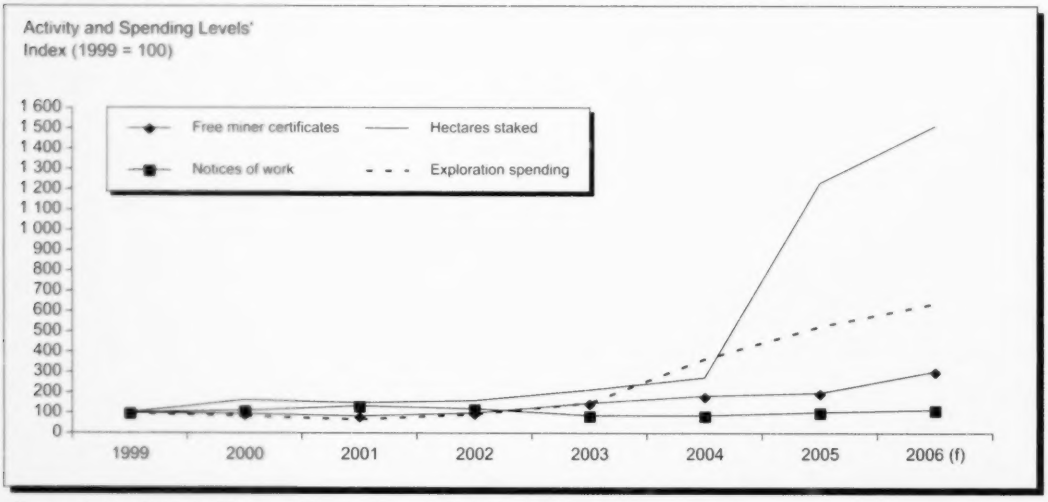
Mineral Commodity	2006 Price Increase Over 2001 Price
	(Number of times)
Molybdenum	10.6
Copper	4.3
Gold	2.2
Coal	2.4
Zinc	2.2

Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
Note: The price of molybdenum is based on the price of MoS_2.

Interestingly, statistical analysis over this time period (1999-2006) shows very high correlations between copper and zinc prices and, similarly, between metallurgical coal and molybdenum prices. One interpretation is that these correlations tie to the booming Chinese demand for construction materials, hence the copper-zinc correlation and the Chinese demand for alloy steel making, which explains the metallurgical coal-molybdenum relationship. The implication for British Columbia is that the province should not only continue to encourage exploration, development and mining of these high-demand minerals, but also encourage the implementation of methods and means to reduce the delivered costs of these commodities to Pacific Rim customers. The strategic target over the longer term is to gain a solid reputation as an established "preferred supplier jurisdiction." This would go a long way to ensuring a robust mineral export economy through both the peaks and troughs experienced in typical mineral demand cycles.

Figure 28 plots key indicators of exploration activity in British Columbia, indexed at a value of 100 in 1999. Notices of work and claim staking (i.e., hectares staked) are seen as the key leading indicators on this chart. Increases in both these indicators show substantial preparation by companies for future exploration work. Although regulations underlying both these time series have undergone changes in recent years, their increases, particularly in 2006 over 2005, predict continued strong

Figure 28
Exploration Activity in British Columbia as Indicated by Free Miner Certificates, Notices of Work, Hectares Staked, and Exploration Spending, 1999-2006 (1999=100)



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.
Note: Exploration spending in 2006 is based on a revised forecast of intentions.

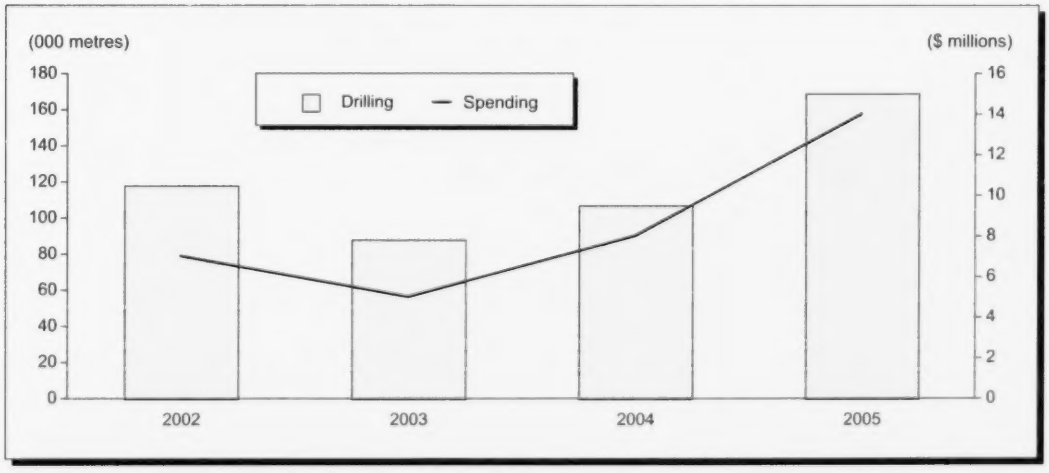
exploration activity in 2007. In staking, a big increase was expected in 2005 as the province moved from ground to map staking. More importantly, increased staking activity was well sustained in 2006, foreshadowing the potential for strong exploration activity in 2007. Looking at Notices of Work, changes in legislation reduced the requirement for these notices, which resulted in a drop and re-stabilization of this time series in 2003 and 2004. Subsequently, the up-ticks in this indicator in 2005 and 2006 represent a healthy growth in the number of Notices of Work of 18% and 12%, respectively. Finally, the highly visible increase in new issues of Free Miner Certificates also supports expectations for robust exploration activity in 2007.

Drilling activity (**Figure 29**) also shows strong growth in recent years. In 2005, drilling moved past the $10 million threshold and is expected to increase further in 2006. This growth in drilling activity has played an important part in increasing the average exploration spending by company, as illustrated in **Figure 33**.

Although seven mineral commodities account for 95% of both provincial mineral sales and exploration spending, mineral potential in British Columbia is highly diverse, well beyond these seven minerals. As a result, it should be noted that active exploration in many other areas, for example export-quality construction aggregates, is increasing. Notwithstanding this search for other valuable minerals, **Figure 30** shows six years of exploration spending on each of the predominant mineral deposit types. As expected, higher metal prices have supported increases in spending on all five metalliferous deposit types. The forecast downturn in coal spending is partially explained by the fact that exploration dollars from prior years are moving into mine development and the construction of coal wash plants, load outs, etc. While exploration for industrial minerals is forecast to remain level in 2005-06, this spending is still an order of magnitude above spending levels prior to 2005. Overall, this analysis of spending by deposit type presents a robust picture of intense and diversified exploration in British Columbia.

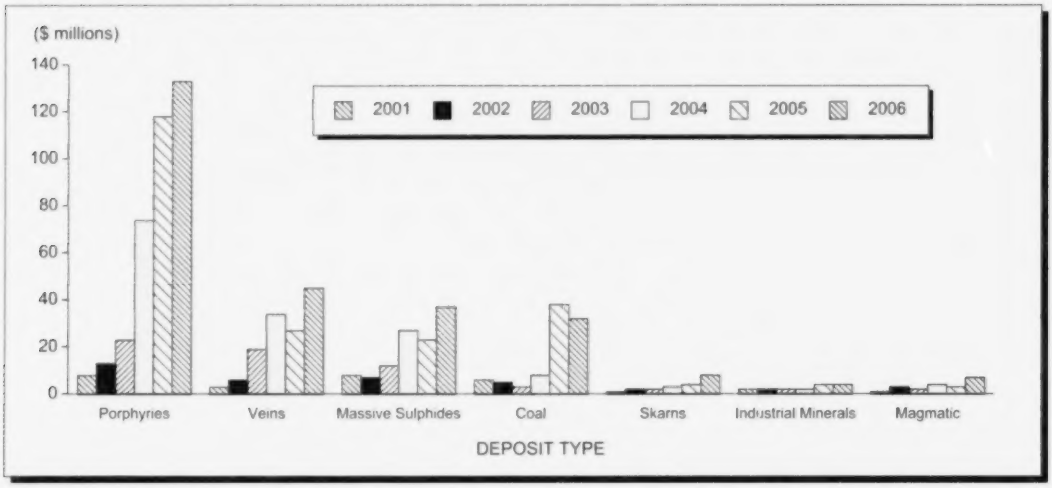
Once again, the extraordinary increase in exploration spending over the past three years is reflected in the total work phase expenditures of **Figure 31**. The stronger forecast growth in 2006 of deposit appraisal spending (up 94%) over that of exploration (up 3%) reflects the sizeable expenditures on definition-type drilling on the large number of advanced exploration projects in British Columbia. There are over 60 projects (**Figure 34** and **Table 17**), that are either in or through the mine

Figure 29
Exploration, Deposit Appraisal and Mine Complex Development Drilling (Surface and Underground), 2002-05



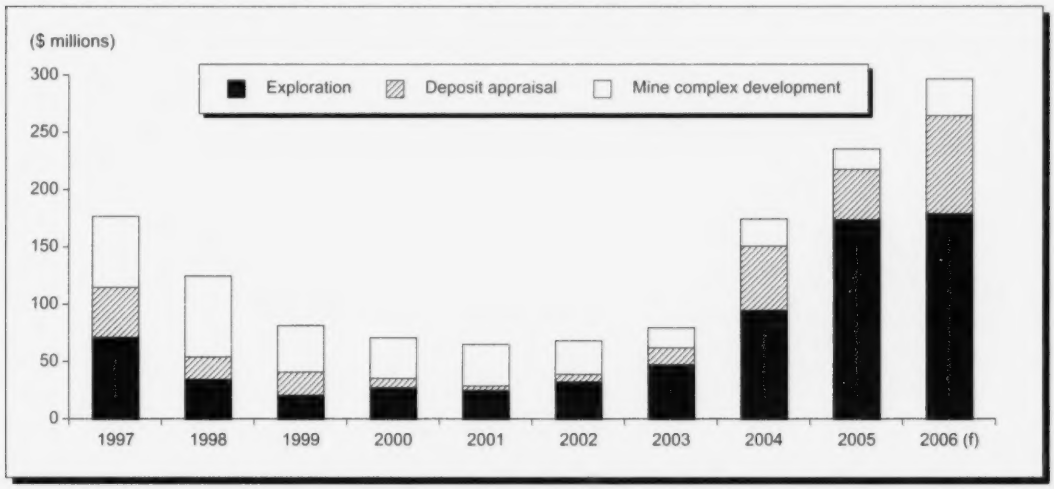
Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.

Figure 30
Exploration Spending in British Columbia, by Deposit Type, 2001-06



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.

Figure 31
Exploration Spending in British Columbia, by Work Phase, 1997-2006



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.

TABLE 17. MINE DEVELOPMENT PROJECTS, NEW MINES, AND ADVANCED-PHASE EXPLORATION PROJECTS IN BRITISH COLUMBIA, 2006

Sector	Exploration Project/Operation	Company/Operator	Commodity	Deposit Setting
MINE STARTS AND RE-STARTS (WITHIN LAST THREE YEARS)				
Coal	Dillon	Western Canadian Coal Corp.	Coal-PCI	Coal
Coal	Trend	NEMI Northern Energy and Mining Inc.	Coal-met	Coal
Coal	Willow Creek	Pine Valley Mining Corporation	Coal-PCI	Coal
Coal	Wolverine Coal	Western Canadian Coal Corp.	Coal	Coal
Metal	Gibraltar	Taseko Mines Ltd.	Cu, Mo	Porphyry
Metal	Mount Polley	Imperial Metals Corporation	Au, Cu	Porphyry
PROPOSED MINE DEVELOPMENTS - COMPLETED OR IN MINE-PERMITTING PROCESS				
Aggregate	Bear River Gravel	Beacon Ventures Inc.	Sand & gravel	Construction aggregate
Aggregate	Eagle Rock	Eagle Rock Materials Ltd.	Crushed rock	Construction aggregate
Aggregate	Hills Bar Aggregate	Qualark Resources	Crushed rock, Au	Construction aggregate
Aggregate	Orca Sand and Gravel	Polaris Minerals Corp.	Sand & gravel	Construction aggregate
Aggregate	Swamp Point	Ascot Resources	Sand & gravel	Construction aggregate
Coal	Brule	Western Canadian Coal Corporation	Coal	Coal
Coal	Hermann	Western Canadian Coal Corporation	Coal-PCI	Coal
Coal	Horizon	Hillsborough Resources Limited	Coal	Coal
Coal	Lodgepole	Cline Mining	Coal	Coal
Coal	Mount Klappan	Fortune Minerals Limited	Coal-anthracite	Coal
Coal	Wapiti Power Development	Hillsborough Resources Limited	Coal-thermal	Coal
IM	Sechelt Carbonate	Pan Pacific Aggregates Ltd.	Limestone, dolomite	Carbonate rock
Metal	Cariboo Gold Quartz/Bonanza	International Wayside Gold Mines Ltd.	Au	Vein-mesothermal
Metal	Cogburn	Leader Mining International Inc.	Magnesium, PGE	Magmatic-PGE
Metal	Davidson	Blue Pearl Mining Ltd.	Molybdenum	Porphyry
Metal	Galore Creek	NovaGold Resources Inc.	Cu, Au, Ag	Porphyry
Metal	Kemess North	Northgate Minerals Corp.	Cu, Au	Porphyry
Metal	Kutcho Creek	Western Keltic Mines Inc.	Cu, Zn, Ag, Au	Volcanogenic massive sulphide
Metal	Max Molybdenum	Rocca Minerals Inc.	Molybdenum	Porphyry
Metal	Morrison/Hearne Hill	Pacific Booker Minerals Inc.	Cu, Au	Porphyry
Metal	Mount Milligan	Placer Dome Inc.	Cu, Au	Porphyry
Metal	Prosperity	Taseko Mines Ltd.	Cu, Au	Porphyry
Metal	Red Chris	bcMetals Corp.	Cu, Au	Porphyry
Metal	Ruby Creek Molybdenum	Adanac Moly Corp.	Molybdenum	Porphyry
Metal	Schaft Creek	Guy Salazar	Au, Ag, Cu, Mo	Porphyry
Metal	Stronsay Lead/Zinc	Cirque Operating Corporation	Zn, Pb, Ag	Sedimentary exhalative
Metal	Sulphurets Gold/Silver	Newhawk Gold Mines Ltd.	Gold, silver	Porphyry
Metal	Sustut Copper	Northgate Minerals Corp.	Cu, Ag	Redbed
Metal	Table Mountain	Cusac Gold Mines	Au	Vein-mesothermal
Metal	Tulsequah Chief	Redfern Resources Ltd.	Cu, Au, Zn, Ag, Pb	Volcanogenic massive sulphide
SIGNIFICANT EXPLORATION COMPLETED - PRE-FEASIBILITY STAGE OR BETTER				
Coal	Babcock (Quintette)	Elk Valley (Quintette)	Coal-met	Coal
Coal	Belcourt-Saxon	Western Canadian Coal Corporation	Coal-PCI	Coal
Coal	Bingay Creek	Hillsborough Resources Ltd.	Coal	Coal
Coal	Lossan	Cline Mining	Coal	Coal
Coal	Saxon	Western Cdn Coal Corp./Northern Energy & Mining	Coal	Coal
Coal	Sukunka	Talisman	Coal-PCI	Coal
IM	Fir	Commerce Resources Corp.	Tantalum, niobium	Industrial mineral
IM	Verity and Fir	Commerce Resources Corp.	Tantalum, niobium	Industrial mineral
Metal	3Ts	Southern Rio Resources Ltd.	Au, Ag	Vein-epithermal
Metal	Bralorne	Bralorne Gold Mines Ltd.	Au	Vein-mesothermal
Metal	Bronson Slope	Skyline Gold Corp.	Cu, Au, Ag, Mo	Porphyry
Metal	Copper Canyon	Eagle Plains Resources Ltd.	Cu, Au, Ag	Vein-mesothermal
Metal	Doc (Gracey)	Glencarin Gold	Au, Ag	Vein-epithermal
Metal	E&L	Silver Standard Resources Inc.	Cu, Ni	Magmatic
Metal	Elk/Siwash	Almaden Minerals Ltd.	Au	Vein-mesothermal
Metal	Golden Crown	Gold City Industries Ltd.	Au, Cu	Vein-mesothermal
Metal	Granduc	Bell Resources Corporation	Cu	Vein-mesothermal
Metal	Inel	Gulf International Minerals Limited	Pb, Zn	Sedimentary exhalative
Metal	J & L (McKinnon Creek)	BacTach Mining Corp.	Au, Ag, Cu, Zn, Pb	Sedimentary exhalative
Metal	Johnny Mountain	Skyline Gold Corporation	Cu, Au, Ag	Vein-mesothermal
Metal	Lexington-Lonestar	Gold City Ind.	Au, Cu	Vein-mesothermal
Metal	New Afton	New Gold Inc.	Cu, Au	Porphyry
Metal	Paydirt	Silver Standard Resources Inc.	Au	Porphyry
Metal	Polaris-Taku, New Polaris	Canarc Resource Corporation	Au	Vein-mesothermal
Metal	Porter-Idaho	Teuton Resources Corp.	Ag	Vein-epithermal
Metal	Premier Big Missouri	Boliden	Au, Ag, Zn	Sedimentary exhalative
Metal	QR	Cross Lake Minerals Ltd.	Au	Skarn
Metal	Red Mountain	Seabridge Gold	Au, Ag	Porphyry
Metal	Rock & Roll	Forrest Syndicate	Cu, Au, Ag	Volcanogenic massive sulphide
Metal	Ruddock Creek	Cross Lake Minerals Ltd.	Zn, Pb	Sedimentary exhalative
Metal	Spectrum (Red Dog)	Seeker Resources Corp.	Au	Porphyry
Metal	Todd Creek	Geofine Exploration Consultants Ltd.	Au	Vein-epithermal
Metal	Turnagain River	Hard Creek Nickel	Ni	Magmatic
Metal	Vault	Ecstall Mining Corp.	Au	Vein-epithermal
Metal	Willa	Bethlehem Resources Corp.	Cu, Au	Porphyry

TABLE 17 (cont'd)

Sector	Exploration Project/Operation	Company/Operator	Commodity	Deposit Setting
STRONG PRE-FEASIBILITY POTENTIAL AND/OR ATTRACTING LARGE EXPLORATION SPENDING				
Coal	Castle Mtn./Bare	EVCC	Coal	Coal
Coal	Falling Creek	Kennecott	Coal	Coal
Coal	Goodrich (Central South)	First Coal Corp.	Coal	Coal
Coal	Mt. Michael (Line Ck)	EVCC	Coal	Coal
Coal	Omega	NEMI/Western Can.	Coal	Coal
Coal	Pine Pass	Falls Mountain Coal	Coal	Coal
Coal	Raven (Tsable R)	Compliance Energy	Coal	Coal
Coal	South Cirque	First Coal	Coal	Coal
Coal	South Ridge	Hillsborough	Coal	Coal
Coal	Wheeler Ridge	EVCC	Coal	Coal
IM	Black Crystal Graphite	Crystal Graphite Corp.	Flake graphite	Industrial mineral
IM	Sechelt	Pan Pacific Aggregates	Limestone, dolomite	Industrial mineral
Metal	Ajax	New Gold Inc.	Cu, Au	Porphyry
Metal	Akie	Ecstall Res./Mantle Res.	Zn, Pb, Ag	Sedimentary exhalative
Metal	Bail Creek	Paget Resources	Cu, Au	Porphyry
Metal	Beaie Lake	Sutcliffe Res.	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Bear (S-Kemess)	Northgate	Cu, Au	Porphyry
Metal	Bugaboo (Pearson)	Emerald Fields	Cu, Ni	Magmatic
Metal	Chica	Amarc	Cu, Au	Porphyry
Metal	Chona	Amarc	Cu, Au	Porphyry
Metal	Coastal (Anyox-Double Ed)	Kenrich-Eskay	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Coles Creek	Callinan Res.	Cu, Au	Porphyry
Metal	Copper Creek (Sheslay)	Firesteel Res.	Cu, Au	Porphyry
Metal	Corey	Kenrich-Eskay	Au, Ag, As, Cu	Volcanogenic massive sulphide
Metal	Crazy Fox (Anticlimax A)	Newmac	Cu, Mo	Porphyry
Metal	Del Norte Ck.	Sabina Silver Corp./Teuton	Au	Vein-epithermal
Metal	Electrum (East Gold)	American Creek Res.	Au	Vein-mesothermal
Metal	Elizabeth	J-Pacific Gold	Au	Vein-mesothermal
Metal	Foremore	Roca Mines	Zn, Pb, Ag, Ba	Volcanogenic massive sulphide
Metal	Fran (St. James)	Yankee Hat Ind.	Cu, Au	Porphyry
Metal	Frank Creek (SCR)	Barker Minerals	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Getty North	Getty Copper Corp.	Cu	Porphyry
Metal	GK	Bitterroot	Cu, Au	Porphyry
Metal	Golden Eagle	Signet Minerals	Au	Vein-epithermal
Metal	Goldstream (Boutwell)	Int'l Bethlehem	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Granduc	Bell Resources	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Homestake Ridge	Bravo Vent.	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Hushamu (Expo)	Lumina Resources Corp.	Cu, Au	Porphyry
Metal	J&L (McKinnon Ck.)	BacTech Mining	Zn, Pb, Ag	Sedimentary exhalative
Metal	Jersey-Emerald	Sultan	Cu, Mo	Porphyry
Metal	Kalum	Eagle Plains	Au, Ag	Vein-mesothermal
Metal	Kena	Sultan Minerals Inc.	Au	Porphyry
Metal	Kinaskan (GJ+QC)	Canadian Gold Hunter	Cu, Au	Porphyry
Metal	Lac La Hache (Aurizon, Ann North)	GWR Res.	Cu, Au	Porphyry/skarn
Metal	Lawyers (Cliff Ck.)	Bishop Gold	Au	Vein-epithermal
Metal	Lloyd-Nordik Project, Lloyd 2	Big Valley Resources	Au	Porphyry
Metal	Lorraine	Eastfield Resources Ltd.	Cu, Au, Ag	Porphyry
Metal	Louise Lake	Firestone Ventures Inc.	Cu, Au, Mo	Porphyry
Metal	Lucky Ship	New Cantech Ventures	Cu, Au	Porphyry
Metal	Lustdust	Alpha Gold	Au	Skarn-manto
Metal	Mineral Creek (Becherer)	Mineral Creek Vent./Bitterroot Res.	Au	Vein-mesothermal
Metal	Mouse Mountain	Richfield Ventures	Cu, Au	Porphyry
Metal	New Polaris	Canarc Resource Corp.	Au	Vein-mesothermal
Metal	Nithi Mountain	Leeward Capital	Mo	Porphyry
Metal	Osilinka (Cat)	Lysander	Cu, Au	Porphyry
Metal	Panorama Ridge	Goldcliff Res.	Au	Skarn
Metal	Pie	Ecstall	Zn, Pb, Ag	Sedimentary exhalative
Metal	Pil (North)	Finlay Minerals	Cu, Au	Porphyry
Metal	Prospect Valley (PV+NIC+RM)	Cons. Spire Vent./Almaden Res.	Au	Vein-epithermal
Metal	QCM (Manson Creek)	Cdn. Gold Hunter	Au	Vein-mesothermal
Metal	Rain (Sorcerer)	Int'l Bethlehem Mining	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	RDN	Northgate/Rimfire	Au, Ag	Volcanogenic massive sulphide
Metal	Redton	Geoinformatics Expl'n	Cu, Au	Porphyry
Metal	Seel (Lean-Too)	Gold Reach Res.	Cu, Au	Porphyry
Metal	Seneca	Carat Expl'n	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Shan	BCM Resouces Corp.	Cu, Mo	Porphyry
Metal	Sib (TV, AP, Lance, Tarn)	St. Andrew Goldfields	Cu, Ag, Au	Volcanogenic massive sulphide
Metal	Sickle	Stealth Minerals	Au, Ag	Vein-epithermal
Metal	Silver Coin	Pinnacle/Mountain Boy	Au, Ag, Cu, Pb, Zn	Vein-mesothermal
Metal	Skoonka Ck (Sam)	Strongbow/Almaden	Au	Vein-epithermal
Metal	Spanish Mtn.	Wildrose/Skygold	Au	Vein-mesothermal
Metal	Storie	Columbia Yukon	Cu, Au	Porphyry
Metal	Sullivan Deeps	Stikine Gold	Zn, Pb, Ag	Sedimentary exhalative
Metal	Summit Lake (Scottie Gold)	Tenajon	Au	Vein-mesothermal
Metal	Tag	CZM Capital	Au, Cu	Vein-mesothermal/epithermal
Metal	Taurus 11	Cusac Gold	Au	Vein-mesothermal
Metal	Thorn	Rimfire/Cangold	Cu, Au, Ag	Vein-epithermal
Metal	Treasure Mountain	Huldra Silver	AG, Pb, Zn	Vein-mesothermal
Metal	Woodjam	Fjordland	Cu, Au	Porphyry
Metal	Yellowjacket	Prize Mining Corp.	Au	Vein-mesothermal

Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
Ag Silver; Agg. Construction aggregates project; Au Gold; Ba Barium; Coal-met. Metallurgical coal; Coal-PCI Pulverized coal injection; Cu Copper; IM Industrial mineral; Mo Molybdenum; Pb Lead; PGE Platinum Group Elements; Zn Zinc.

permitting process, or at the pre-feasibility stage or better. As the first clusters of these advanced projects become mines, it is projected that mine complex development spending will increase and eventually a healthy and sustained balance of spending in all three work phases will prevail.

While numerous consolidations of major mining companies have taken place over the past couple of years, the important presence of exploration spending by these senior companies continues to increase (**Figure 32**). Even more important for sustainable mine development in British Columbia is the exponential increase in junior company spending, given their reputation of being the "real mine finders."

Figure 33 shows two additional significant trends: an increase in the number of companies exploring in the province and a sharp increase in average annual exploration expenditures per company. Although forecast to decrease slightly in 2006, the number of companies, which now exceeds 200, has doubled since 2001 and the average spending per company has grown to over $1 million. As the number of companies has increased, the number of exploration projects has as well. In both 2005 and 2006, there were well over 600 active exploration projects in the province.

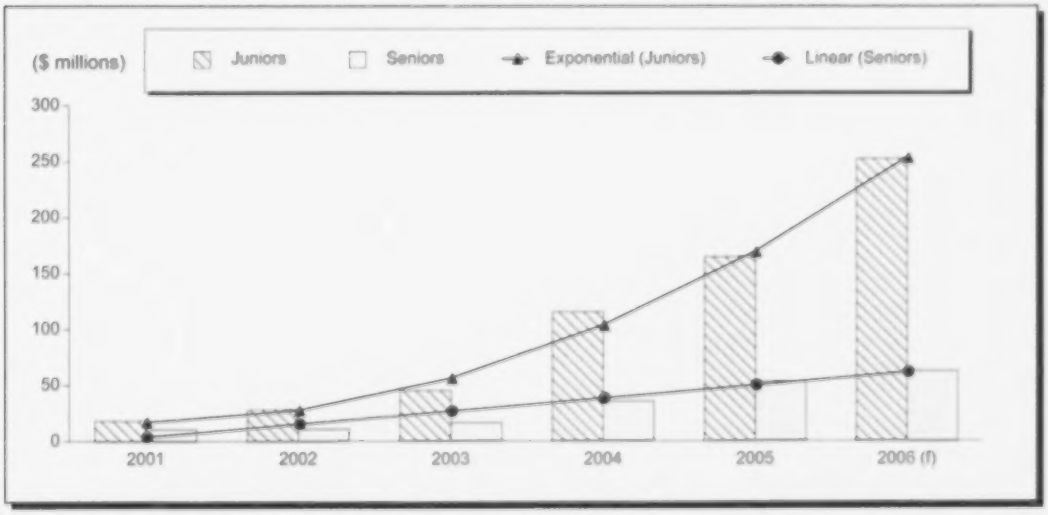
Exploration Highlights

In 2006, exploration spending on over 600 projects in British Columbia is forecast to exceed a quarter billion dollars. Because of this large number of exploration projects, only 145 of the more advanced projects are summarized in **Table 17**.

The table is divided into four sections to reflect the transition of projects from various stages of advanced exploration to operating mines. Section 1 lists the six newly operating mines developed within the past three years. As a footnote, although two of the coal mines on this list shut down in 2006, plans are in progress for replacing them with production from other reserves.

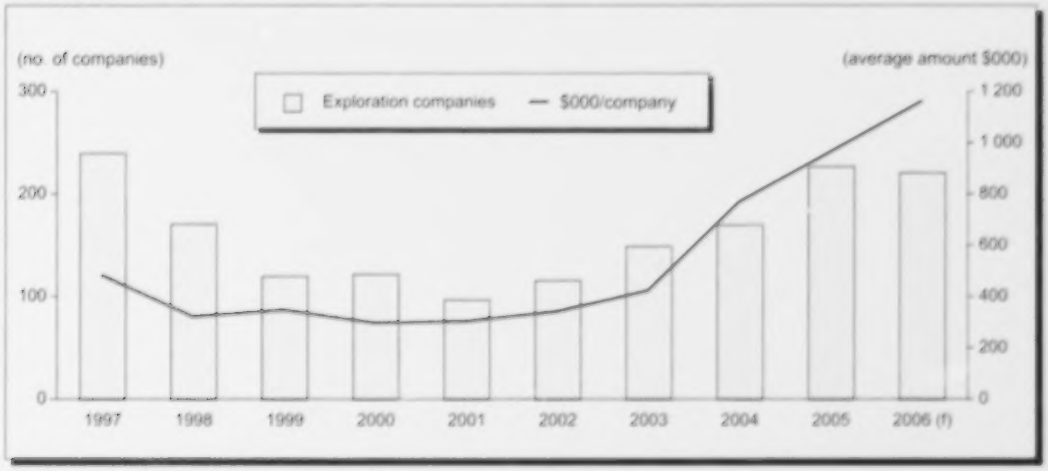
Sections 2 and 3 of **Table 17** list more than 60 exploration projects that are largely at the pre-feasibility stage or better. In general, exploration on these projects has identified some level of measured-indicated and/or inferred reserves. The 30 projects in Section 2 are considered the most

Figure 32
Exploration Spending in British Columbia, by Junior and Senior Companies, 2001-06



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.

Figure 33
Number of Exploration Companies and Average Amount Spent Per Company in British Columbia, 1997-2006



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.
(f) Forecast.

advanced since all are either in or through the mine permitting process. It is estimated that somewhere between two and seven of these projects will begin mining operations in 2007. The locations of these advanced projects in Sections 2 and 3 are plotted on **Figure 34**. Section 4 of this table highlights an additional 80 advanced-stage projects, which are currently attracting large sums of exploration spending (i.e., each with an estimated cumulative expenditure of more than $1 million within the most recent three-year period). Internet links to detailed profiles of these projects and many of the other exploration projects, as well as profiles of the mineral occurrences in the province, overviews of exploration and geology, and maps covering project locations, mineral potential and geology, can be accessed on the British Columbia Geological Survey web site at www.em.gov.bc.ca/mining/geolsurv/Publications/.

The large number of mine development and exploration projects listed in **Table 17** along with the additional 450 active projects in 2006 that are not listed, bode well for securing an ongoing stream of future mine developments in British Columbia.

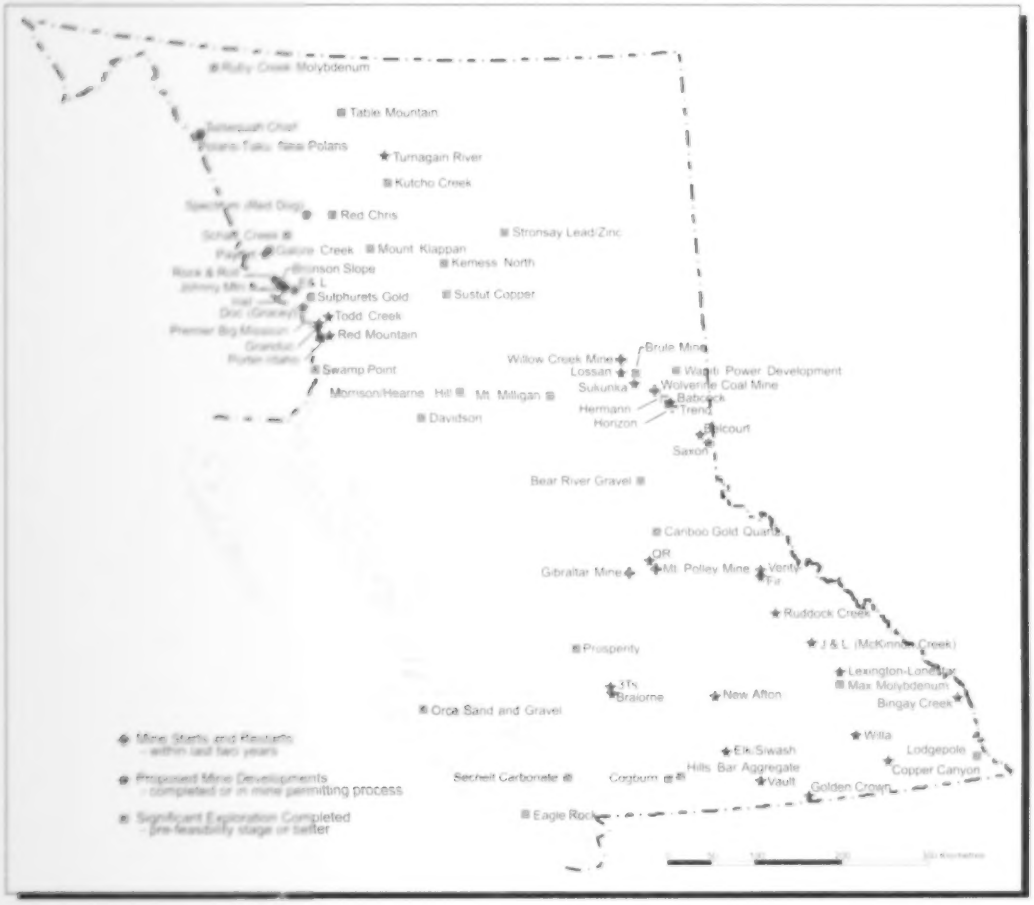
As a further observation, exploration efforts in 2006 not only advanced projects, but they were also rewarded with new discoveries. **Figure 35** highlights 30 of these more significant discoveries.

Conclusions and Future Outlook

British Columbia, with over 150 years of world-class mining and exploration experience, and seemingly endless future mineral potential from its landmass of almost one million square kilometres, operates from a very strong base. Undoubtedly, through concerted efforts to continue to meet the challenges of positioning itself as a "preferred mineral supplier jurisdiction," its future as a major world supplier of minerals is assured.

In the past, many factors substantiated the province's strong mineral base and capabilities. World-class mines such as Island Copper and Sullivan have proven their length and strength through their longevity of production over decades. Eskay Creek and Bralorne verify the fact that exceptionally high-grade economic ore deposits exist within the province. The cluster of Elk Valley coal mines

Figure 34
Advanced-Stage Exploration Projects and Recent Mine Development in British Columbia, 2006



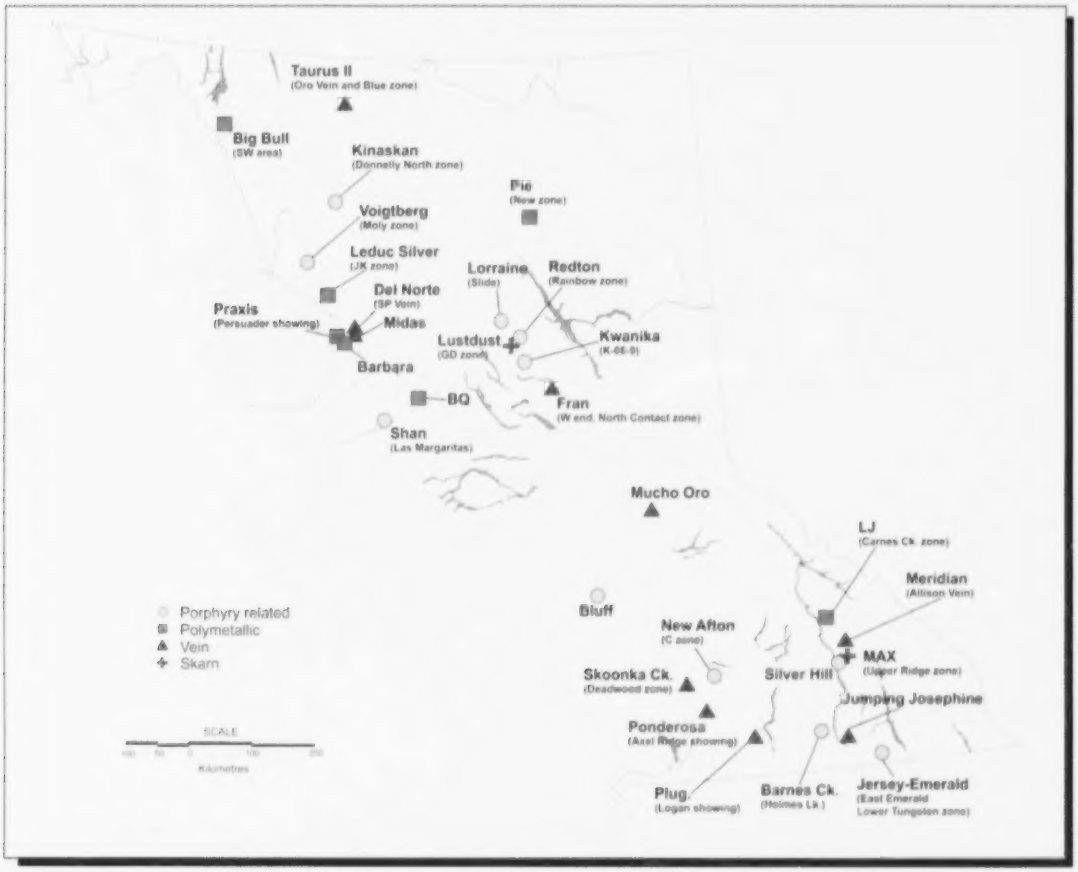
Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.

and Highland Valley Copper are excellent examples of mining camps whose exceptionally large annual production quantities are measured in percentages of world supplies.

In the present, with over $0.25 billion in exploration spending, 2006 has witnessed one of the most extensive and intensive exploration programs in this province ever. At least 30 new discoveries were made, 30 exploration projects are in or through the mine permitting process, another 30+ are at the pre-feasibility stage or better, 80 more have attracted large budget expenditures, and an additional 450+ projects were actively explored.

In the future, the extraordinary exploration activity and successes of 2006, as well as the four years of rapid growth in exploration spending leading up to 2006, provide some degree of optimism about British Columbia's future in mining and exploration. In recent years, six mines came into operation, many projects are moving closer to the development-construction stage, and many more advanced and advancing exploration projects are on the way. What are the best predictors of a strong exploration economy continuing in 2007? These are: 1) large numbers of actively advancing exploration

Figure 35
New Mineral Discoveries in British Columbia, 2006



Source: British Columbia Ministry of Energy, Mines and Petroleum Resources.

projects, which have exceeded 600 for two years running; 2) the presence of numerous, well-financed, exploration companies; 3) resident senior multi-national mining companies with a commitment to British Columbia; and 4) budding partnerships with Asian companies, which are looking for substantial and secure long-term mineral supplies from this province.

Further, in the exploration and mining sector, government initiatives are focused on: 1) training and development to meet predicted skills and labour shortages; 2) developing mining and exploration working relationships with First Nations and rural communities; 3) encouraging appropriate infrastructure development; and 4) attracting world-class exploration and mining companies. These initiatives, along with current robust exploration and mining activity, will strengthen British Columbia's ability to become a recognized "preferred mineral supplier jurisdiction" both in the near future and over the longer term. Finally, this West Coast province and its ports are strategically located for supplying minerals to Pacific Rim countries where total customers equal well over half of the world's six billion people.

2.11 YUKON[23]

Overview

Mineral exploration in the Yukon has reached record levels with over $80 million spent on the search for base and precious metals, coal, gemstones, and uranium in 2006 (**Figure 36**). Exploration for gold attracted the largest share of the exploration dollars capturing 35%, followed by zinc at 22%, uranium at 15%, copper at 12%, silver at 7%, and tungsten and molybdenum at 6%. The remainder was spent on coal and gemstones.

Claim staking was also robust in 2006 with a total of 14 034 claims staked during the season (**Figure 37**), which increased the number of claims in good standing to 57 968 by the end of the year (**Figure 38**).

Mines and Mine Development

Mine development expenditures have also increased dramatically with an estimated $50 million being spent on Sherwood Copper Corporation's Minto copper-gold-silver mine, which is scheduled to be in production in the second quarter of 2007. The total development costs at Minto, including a 50% mill expansion in year one, are estimated to be $107 million. Construction of the mine was on schedule at year-end and production is slated for the second quarter of 2007.

The deposit is a magmatic hydrothermal copper-gold deposit hosted in foliated zones within granodiorite of the Jurassic Klottasin Batholith. The deposit bears similarities to porphyry and iron oxide-copper-gold deposits, but the origin of the deposit is still subject to debate.

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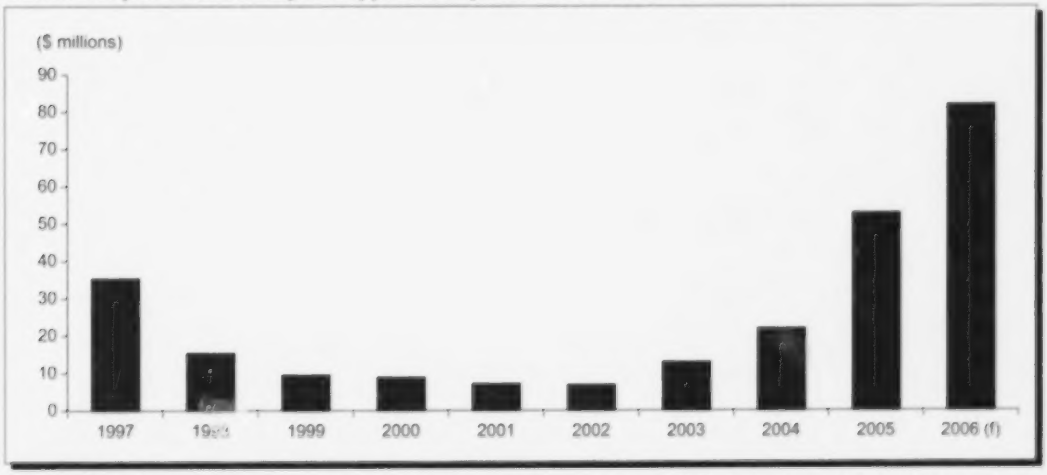
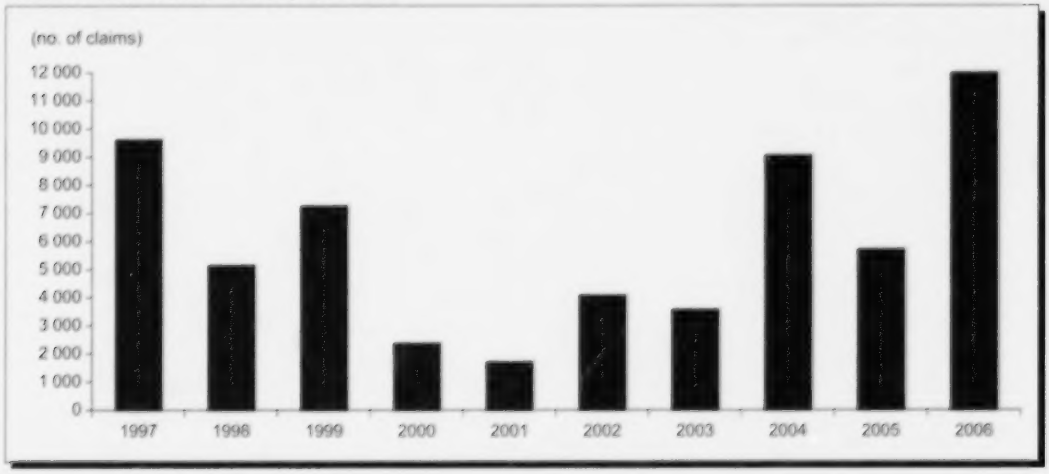
[23] The Yukon review of activities was prepared by Mike Burke. For more information, the reader is invited to contact Mr. Burke by telephone at 867-667-3202 or by e-mail at Mike.Burke@gov.yk.ca.

Figure 36
Yukon's Exploration and Deposit Appraisal Expenditures, 1997-2006



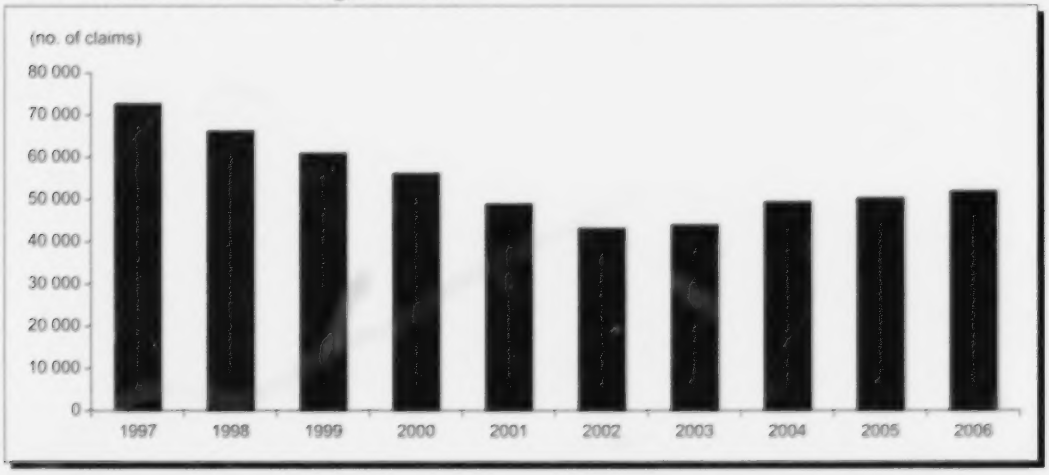
Source: Yukon Geological Survey, based on the federal-provincial/territorial Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(f) Forecast.

Figure 37
Yukon's New Claims Staked, 1997-2006



Source: Yukon Geological Survey.

Figure 38
Yukon's Claims in Good Standing, 1997-2006



Source: Yukon Geological Survey.

The deposit has measured and indicated reserves of 9.06 Mt grading 1.78% copper, 0.62 g/t gold and 7.3 g/t silver at a 0.5% copper cut-off grade and, at a 1.5% copper cut-off, the deposit contains a high-grade core of 4.03 Mt grading 2.82% copper, 1.02 g/t gold and 11.6 g/t silver.

The feasibility study on the project indicates the head grades will average 3.3% copper and 0.94 g/t gold in the first year and 2.4% copper and 0.88 g/t gold in the first six years of operation. Production will average 41 Mlb of copper, 17 295 oz of gold and 250 000 oz of silver in the first six years of operation at a cash cost of US$0.57/lb, net of by-product credits.

Financing for the completion of construction of the mine was provided by a debt package with Macquarie Bank Ltd. totaling $85 million. The project has a very attractive net present value of $173.4 million at a 7.5% discount rate pre-tax and an internal rate of return of 53.2%. The company continues to optimize the feasibility study and expects that several improvements to the project, such as tying in to the proposed expansion of the Yukon power grid, will lead to further improvements to the project.

Yukon Zinc Corporation completed a bankable feasibility study on the Wolverine (zinc-silver-lead-copper-gold) deposit in May 2006 and proceeded with an optimization study during the year. The Wolverine project received its quartz mining licence and, upon completion of the optimization of the feasibility study and the securing of project financing, is expected to make a production decision in 2007.

Cash Minerals Ltd. completed a feasibility study on its Division Mountain coal project. The feasibility study concluded that current conditions did not support the development of a mine to serve the export market, although it did find it technically and economically feasible to develop an open-pit mine with the product being sold to a potential 50-megawatt mine-mouth power station.

Placer Mining

Today, more than 100 years after the discovery of gold in the Yukon, placer mining is still an important sector in the Yukon's economy. Over 16.6 million crude oz (518 t) of placer gold have been produced to date in the Yukon. At today's prices, this production would be worth more than $9 billion.

Approximately 350 people were directly employed at 115 placer mines in 2006. Several hundred more were employed in businesses and industries that serve the placer mining industry. Most of the placer operations were small and family-run with an average of three or four employees.

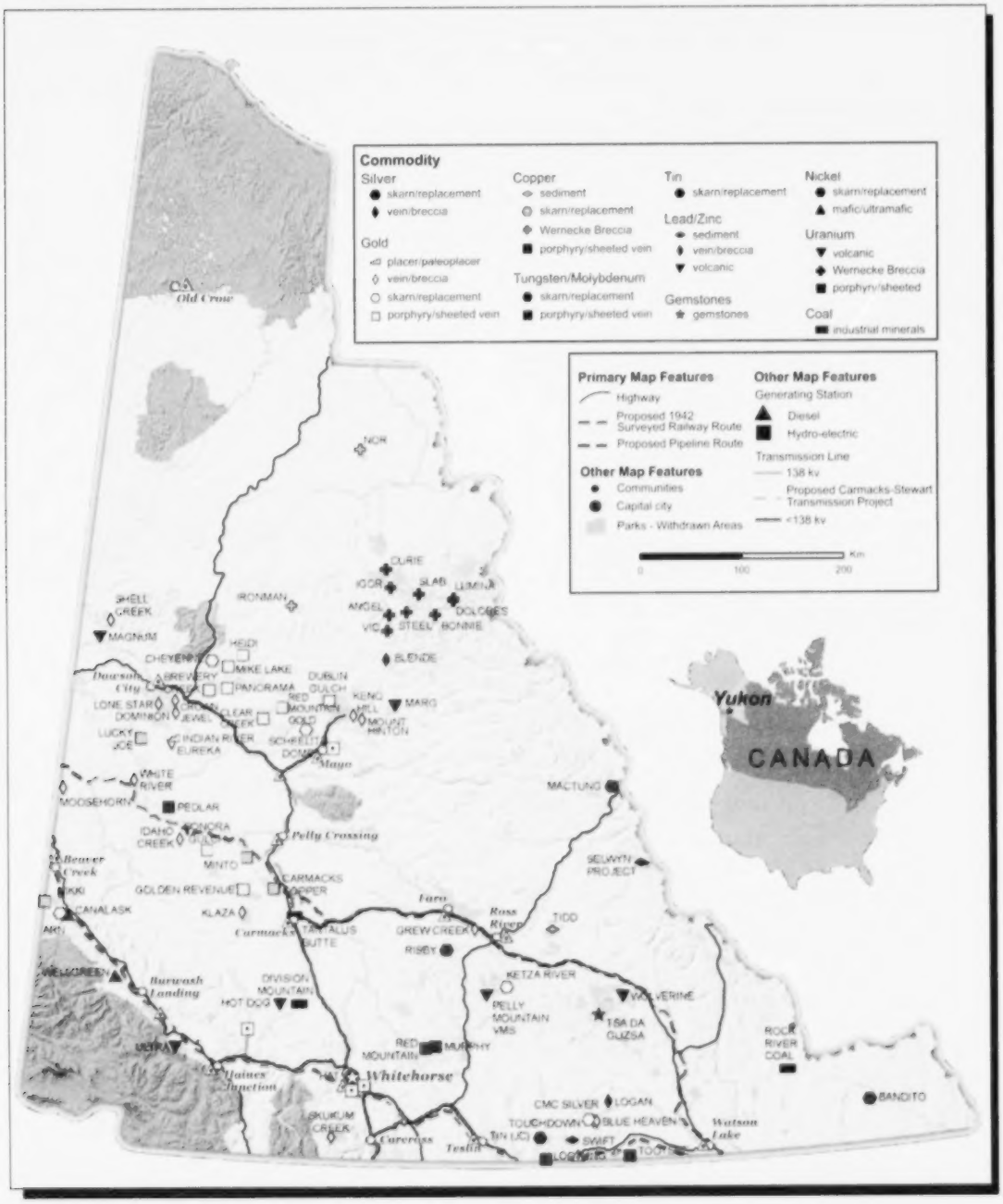
The majority of active placer mining operations were in the Dawson mining district, followed by the Whitehorse mining district and the Mayo mining district. No placer mines were active in the Watson Lake mining district.

Total Yukon placer gold production in 2006 was 57 934 crude oz (1 801 950 g), compared to 70 322 crude oz (2 187 260 g) in 2005. The value of this 2006 gold production was $31.8 million.

Exploration

Exploration activity experienced a dramatic increase in the Yukon in 2006. In fact, mineral exploration expenditures rose for the fifth consecutive year to reach an estimated $80 million, a huge increase over the $7.4 million spent in 2001 (**Figure 36**). This increase was reflected at all levels of activity from the grassroots stage to advanced exploration, pre-feasibility and feasibility-stage projects. Of the approximately 150 exploration projects in the Yukon (**Figure 39**), 70 had expenditures of greater than $100 000, with 21 of these projects spending more than $1 000 000.

Figure 39
Project Location Map, Yukon, 2006



Source: Yukon Geological Survey.

The largest program was the Selwyn project (Pacifica Resources Ltd.), where drilling is continuing into December, with expenditures of over $12 million to confirm and expand the huge zinc resources at Howard's Pass.

The Minto project also enjoyed exploration success on the mine property. Several areas have had historical (1970s) drill intersections with significant copper that had not received any follow-up. Geophysics in these areas has helped refine and expand the exploration targets on the property. Sherwood concentrated its drilling efforts mainly on a target just south (130 m) of the planned open pit called Area 2. The company drilled 79 holes in the target area intersecting mineralization that appears to be an extension of the main Minto deposit. The drilling intersected grades and thickness of mineralization similar to the Minto deposit, including high-grade bornite-rich mineralization that returned values such as 5.1% copper and 2.6 g/t gold over 8.1 m within a 13.4-m interval grading 3.4% copper and 1.7 g/t gold in hole 06SWC-146. Sherwood has engaged SRK Consulting to conduct an independent pre-feasibility study on the Area 2 mineralization discovered in this year's exploration. Many more compelling exploration targets exist on the property and the potential to extend the mine life is excellent.

Government Incentives and Strategies

The Yukon government continued to support the mineral industry in several areas including: 1) the Yukon Mining Incentives Program, which offered approximately $880 000 to 53 successful applicants; and 2) the Yukon Mineral Exploration Tax Credit, which offers a refundable corporate and personal income tax credit of 25% of eligible mineral exploration expenditures incurred by qualified individuals and corporations conducting off-mine-site exploration in the Yukon between April 1, 2004, and March 31, 2007.

Control over the Territory's natural resources was recently transferred from Canada to the Yukon government. Decisions regarding oil and gas, mining, lands, forests and water are now made by the Yukon government. Internally, the government has initiated an Integrated Resource Management Strategy. This strategy streamlines the review process by addressing policies and legislation gaps, and it establishes better collaboration between departments.

An example of this strategy is the Project Management Process that assists mining companies in their efforts to secure permits for development proposals. Project coordinators are assigned to individual projects to assist with the reviews and timely resolution of issues for each project. The project coordinators report to a team of deputy ministers that is responsible for regulatory approvals. This committee is chaired by Energy, Mines and Resources. Currently, six Yukon projects have been assigned project coordinators. These consist of Yukon Zinc Corporation's Wolverine project (zinc-silver-lead-copper-gold), Cash Minerals Ltd.'s Division Mountain project (coal), Western Silver's Carmacks Copper project (copper-gold), Tintina Mines Ltd.'s Red Mountain project (molybdenum), YGC Resource's Ketza River project (gold), and Tagish Lake Gold Corp.'s Skukum Creek project (gold-silver).

The Government of Yukon also continued to maintain current levels of funding for geoscience projects under the auspices of the Yukon Geological Survey. Of further interest, 11 of 13 Yukon First Nations have ratified their land claim agreements.

Yukon Geological Survey

Projects

The Yukon Geological Survey (YGS) completed or supported 24 field projects in 2006. These projects included a diversity of work that reflects the YGS's mandate to support hydrocarbon development and to meet increased demands for baseline data to address environmental and development issues while continuing to support its primary client, the mineral industry. Projects included

1:50 000-scale bedrock mapping, mineral deposit studies, surficial studies and mapping, regional stream sediment geochemistry, an aeromagnetic survey, and topical geology studies.

Information Management and Distribution

With the increasing volume of information generated by the YGS and others, and rapidly evolving digital technology, the Survey continues to put significant resources into making geological information more accessible. The YGS web site and Map Gallery are both undergoing substantial revisions that will make them easier to use and provide greater on-line functionality to the MINFILE and publications databases. A large part of the effort has gone into developing and maintaining key databases and making all of the information Internet-accessible. Ongoing activities include support for the H.S. Bostock Core Library and the Energy, Mines and Resources (EMR) library (Elijah Smith Building) in Whitehorse.

Databases

Yukon MINFILE is a database containing over 2600 records on the Yukon's mineral occurrences. It is maintained by Robert Deklerk and Lara Lewis. Recent efforts have gone toward making the database fully searchable on-line. As a result, the most current CD-ROM release dates back to November 2005 and will likely be the last CD-ROM of the database released. On-line searching of the database will allow the user to access the most complete and up-to-date data as it will link to a non-static dataset. This new direction has required conversion of the database from Access to Oracle and the standardization of data and data fields. The on-line search is expected to be completed in mid-2007.

The Yukon Placer Database, compiled by Bill LeBarge, was updated and a new version was released in May 2006. The database is in Microsoft Access 2000 format and is a comprehensive record of the geology and history of Yukon placer mining. The database contains descriptions of 457 streams and rivers, and 1443 associated placer occurrences, of which 130 were updated for this version of the database. It also includes location maps in Portable Document Format (PDF). A new release is planned for spring 2007, which will include detailed updated information from placer mining activity between 2003 and 2006.

The YGS, in partnership with the Geological Survey of Canada (GSC), is in the process of updating the Yukon Digital Geology compilation, which was last revised in 2003. The revised database will not only incorporate recent maps, but will also conform to the North American Data Model. This standard, which is slowly being adopted by geological surveys across North America, allows users to generate a seamless map from more than one source (i.e., two or more jurisdictions). The model will allow the selection of subsets of data to generate maps defined by lithology, age, or map unit. It will also be possible to create generalized maps through a hierarchy of attributes (i.e., Group vs. Formation or Paleozoic vs. Devonian). The new map database is expected to be available on-line by April 2007.

Jeff Bond and Panya Lipovsky began development of a Digital Surficial Geology Map of the Yukon in partnership with the GSC and with SINED funding. The map database will have the same functionality as the bedrock database. Release is planned for early 2008.

The Yukon Regional Geochemical Database 2003, compiled by Danièle Héon, contains all of the available digital data for regional stream sediment surveys that have been gathered in the Yukon under the GSC's National Geochemical Reconnaissance Program. It can be viewed on-line through the Map Gallery and is available on CD-ROM in Microsoft Excel 2000 format and in ESRI ArcView Shapefile format.

The YukonAge Database, compiled by Katrin Breitsprecher and Jim Mortensen at the University of British Columbia with funding from the YGS, was updated in 2004. It can be viewed on the YGS

Map Gallery in a version modified by Mike Villeneuve and Linda Richard of the GSC. The database now contains 1556 age determinations derived from 1166 rock samples from the Yukon Territory. It is available in both Microsoft Access 2000 format and as a flat file in Microsoft Excel 2000 format so that the data may be viewed without Microsoft Access.

The Yukon Geoscience Publications Database is available on-line. It is current and contains almost 8000 references to papers on Yukon geology and mineral deposits, including YGS publications.

All open assessment reports (more than 5000) are now in PDF format and accessible over the Internet through the EMR library web site. In the Yukon, reports remain confidential for five years. In addition, exploration records have been acquired from the various companies that owned the Faro district. This acquisition includes both records of the Faro district and outside projects. Most of the records are now available for viewing.

Information Distribution

The YGS distributes information in three formats: 1) paper maps and reports are sold and distributed through the Geoscience Information and Sales Office; 2) many recent publications and databases are available in digital format at much lower prices than for paper copies; and 3) most publications are available as PDF files on the YGS web site (www.geology.gov.yk.ca) free of charge. A catalogue of assessment reports is also available on-line at www.emr.gov.yk.ca/library.

Spatial data are available through an interactive map server, the Map Gallery, which can be accessed through the YGS web site. The YGS is continuing to improve the Map Gallery and welcomes users' feedback and suggested improvements.

2.12 NORTHWEST TERRITORIES[24]

Introduction

The Northwest Territories constitutes 13.48% of Canada's total landmass.[25] The geology of the Northwest Territories encompasses over four billion years of the earth's geologic history. Base- and precious-metal mines have traditionally been the mainstay of economic activity in the Northwest Territories. However, beginning in the early 1990s, there was a shift to diamond exploration and diamond mining. A focus has also returned to the vast oil and gas resources of the Mackenzie Valley and Delta.

Since the discovery of diamonds in the Lac de Gras region in 1994, the Northwest Territories has emerged as a significant producer of diamonds on the world stage and has placed Canada in the forefront of diamond producers. Ekati, Canada's first diamond mine, reached full production during 1999. Diavik, Canada's second diamond mine, commenced operations in February 2003. The Snap Lake diamond project of De Beers Canada Mining Inc. received regulatory approval in 2005 and is in the construction phase; production is expected to commence in the third quarter of 2007. De Beers' Gahcho Kué project was referred to an environmental assessment by the Mackenzie Valley Environmental Impact Review Board. De Beers has appealed the referral to the Northwest Territories' Supreme Court. The Environmental Impact Review is proceeding and is expected to

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[24] This review was prepared by the Minerals, Oil and Gas Division of the Department of Industry, Tourism and Investment, Government of the Northwest Territories. For more information, the reader is invited to contact Christy Campbell by telephone at 867-920-3345 or by e-mail at christy_campbell@gov.nt.ca.

[25] http://atlas.gc.ca/site/english/learningresources/facts/index.html.

take anywhere from 24 to 36 months, which would put the project start-up in 2011 and the achievement of full production in 2012.

Mineral Production Summary

The total value of metal and diamond shipments from the Northwest Territories decreased to $1.705 billion in 2005 from $2.105 billion in 2004. The decrease is primarily due to lower diamond production and lower diamond value from the Ekati mine. The Giant gold mine was closed in mid-2004. Therefore, there were no gold shipments in the Northwest Territories in 2005. The CanTung tungsten mine, however, re-opened in October 2005.

Diamond shipments accounted for 98.7% of the total value of metal and nonmetal production in the Northwest Territories in 2005. During the same year, the Northwest Territories accounted for 100% of Canadian diamond production and for 8% of the world total diamond production by weight and 11% by value. The CanTung tungsten mine produced 700 t of tungsten in 2005 for a total value of $21.3 million.

Producing Mines

There are three operating mines in the Northwest Territories: the CanTung tungsten mine, the Ekati diamond mine, and the Diavik diamond mine.

On May 10, 2005, the Board of Directors of De Beers S.A. approved total financing of $636 million for the Snap Lake mine, and the mine is currently under construction. Mine construction started in 2005 after full mobilization to the site over the 2005 winter road. The construction schedule was revised due to a short 2006 winter road season and is on schedule. Production is expected to start in the third quarter of 2007 with full production reached in 2008.

North American Tungsten Corporation Ltd. re-opened its CanTung tungsten mine, located approximately 300 km northeast of Watson Lake, east of the Northwest Territories-Yukon border, on September 1, 2005. The mine has been in continuous production for just over a year. In the nine-month period from October 2005 to June 2006, a total of 262 212 tons grading 1.05% WO_3 were milled and 175 264 metric tonne units (MTU) contained in concentrates were produced. Production is expected to increase significantly in the next quarter following a significant amount of underground development, including recoveries from high-grade pillars, long hole stopes, and the development of the new Pit Underground (PUG) zone.

The mine employs over 190 people on a three-week rotational schedule. CanTung has historically produced 6% of the world's tungsten and is recognized as one of the largest tungsten mines currently in production outside of China.

The Ekati diamond mine (BHP Billiton Diamonds Inc. [80%], Stu Blusson [10%] and Chuck Fipke [10%]) is located 330 km northeast of Yellowknife. As of June 2006, Ekati had recovered a total of approximately 31 million carats (Mct) since going into production in 1999.

The mine produced 1.89 Mct of diamonds over the first three quarters of 2006 versus 3.1 Mct over the same period in 2005. The volume of ore processed at Ekati was 4% higher than the September 2005 quarter. As Ekati transitions from open-pit mining to predominantly underground mining, the mix of ore processed will change from time to time. This resulted in a reduced number of higher-value carats recovered during the quarter. The decrease in production was forecast as lower-grade ore was being processed.

In June 2006, BHP and its partners approved the Koala Underground Development. The $250 million development will include access, ventilation and a conveyor extension to recover approximately 9.8 Mct of diamonds over an 11-year period.

Ekati employs approximately 684 people. Sixty-nine percent of all workers at Ekati are Northerners and 35.4% of these employees are Aboriginal.

The Diavik diamond mine, located 300 km northeast of Yellowknife, is an unincorporated joint venture between Diavik Diamond Mines Inc. (60%) (a subsidiary of Rio Tinto plc) and Aber Diamond Limited Partnership (40%).

Despite the short winter road season in 2006, the company has maintained operations and planned construction. Fuel and supplies that were not transported in by winter road were airlifted in. The airlift continued to late 2006.

During the first three quarters of 2006, the Diavik mine produced 7.337 Mct of diamonds.

Construction of the new A418 dyke was completed as planned in the third quarter of 2006 as a direct result of a successful airlift program. The dyke was made watertight in early September and the majority of pool water had been removed. Monitoring of instrumentation within the A418 dyke showed it was performing as planned.

As part of the underground feasibility studies, the A154 tunnel reached 1400 m from surface and a further 870 m were completed on the branch tunnel, allowing workers to reach the A418 kimberlite. As of September 30, 2006, another 900 m of tunnelling were required to reach the A154 kimberlite. The decline to the A21 pipe advanced 1300 m and had nearly reached the kimberlite contact. Diavik's operations work force averaged 760 during the third quarter, of which 67% were Northern, with approximately half of these Aboriginal. Currently, Diavik is training 18 northern residents as apprentice trades workers, of whom two-thirds are Aboriginal. Diavik Diamond Mine's second Aboriginal Leadership Development Program continues, as does a program to train Aboriginal and Inuit underground miners.

Diavik remains in compliance with all environmental permits, licences and authorizations. It is in the process of applying for a renewal of its water licence, which expires in August 2007. The company has submitted updated management plans to the new Wek'eezhii Land and Water Board (WLWB). In December 2006, Diavik received instructions from the WLWB indicating that it would be required to make changes to its Aquatic Effects Monitoring Program and to its Ammonia Management Plan prior to the issuance of a renewal licence.

New Mines

De Beers Canada Mining Inc. is continuing construction at its Snap Lake diamond project located 220 km northeast of Yellowknife. The camp was expanded from a capacity of 260 to 700 employees with a new kitchen, and dining and recreation facilities. Progress has been made on the process plant, utilities building, and the services complex. Underground ventilation has been installed and a 1.6-km tunnel that will house a conveyor ramp to surface has been blasted. The construction schedule was reworked and, despite the short winter road season, the project is on schedule to begin production in the third quarter of 2007. The mine is expected to process 16 Mt of ore at a recoverable grade of 1.2 ct/t. Mine capacity is projected at an average rate of 3000 t/d over a 20-year mine life. The project is expected to employ about 500 full-time workers during operations. As of August 15, 2006, a total of $431 898 107 had been spent on contracts and purchase orders for the construction of the mine.

Exploration

Diamonds

De Beers Canada Mining Inc. (51%), in a joint venture with Mountain Province Diamonds Inc. (44.1%) and Camphor Ventures Inc. (4.9%), completed 9448 m of delineation drilling, geotechnical,

and engineering core in 31 holes on the Gahcho Kué project to support a definitive feasibility study. The delineation drilling expanded the dimensions of the Tuzo pipe. A 192-kg sample from one of the pipes recovered 1773 microdiamonds using a larger-than-75 micron screen. Gahcho Kué is located 300 km northeast of Yellowknife and is currently undergoing an Environmental Assessment by the Mackenzie Valley Environmental Impact Review Board. The Mackenzie Valley Environmental Impact Review Board referred the project to environmental assessment. De Beers has appealed this referral to the Northwest Territories Supreme Court. The case has been heard and, pending a decision, the Environmental Impact Review is proceeding and is expected to take anywhere from 24 to 36 months to complete, which would put the project start-up in 2011 and full production in 2012.

Peregrine Diamonds Ltd. (54.47%) and partners DHK Diamonds Inc. (13.27%), Archon Minerals Limited (13.27%), Aber Diamonds Corporation (7.35%), and SouthernEra Diamonds Inc. (4.9%) collected a bulk sample from the DO-27 kimberlite pipe. From 548 dry tonnes of kimberlite, 8855 diamonds with an aggregate weight of 427 ct were collected over a base sieve with a 1-mm mesh. The program returned an average grade of 0.88 ct/t and tripled the known area of higher-grade kimberlite. Drilling also further delineated the pipe, twinned the reverse circulation holes for petrographic work, and collected geotechnical information.

Peregrine Diamonds also conducted ground geophysics, till sampling and drilling on its Lac de Gras East, Lac de Gras West, and Pellat Lake projects. Kimberlite was intersected in one hole on the Pellat Lake property.

Stornoway Diamonds Corporation undertook drill programs on the Lac de Gras property, located 300 km north of Yellowknife, in late 2005 and again in early 2006. Eight holes, totaling 366 m, were drilled in 2005, and six holes totaling 257 m were drilled in 2006. The company also undertook till sampling on the Lac de Gras property. Recent sampling results are pending.

Anglo Swiss Resources Inc. (60%) and New Shoshoni Ventures Ltd. (40%) flew a 1695-line-km Fugro magnetic-electromagnetic survey at a 100-m line spacing over the eastern portion of their Fry Inlet property, located 25 km north of Ekati. The survey identified 12 high-priority targets. Selected targets were followed up with till sampling.

Arctic Star Diamond Corp. (with Kennecott Canada Exploration Inc. retaining back-in rights) drilled nine holes totaling 812 m on its Credit Lake property, 40 km southwest of the Ekati mine. No kimberlite was intersected. The company carried out max-min and gravity ground geophysical surveys, a 1008-line-km high-resolution magnetic survey, and a seismic refraction survey. A helicopter-borne magnetic survey was completed on the New-Big property, 22 km southwest of the Credit Lake property. Summer exploration included additional till sampling. An in-field heavy mineral jig separation lab was set up to speed the turnaround time of heavy mineral separation, allowing indicator mineral results to guide further till sample collection.

BHP Billiton Diamonds Inc., in a joint venture with Archon Minerals Ltd. and Charles Fipke (10%), explored the Ekati leases and the Buffer zone, and completed bulk samples on the Jay and Pigeon pipes. Delineation drilling was completed on the Sable, Jay and other known pipes. A FALCON gravity gradiometer survey was flown and followed up with ground magnetic and horizontal loop electromagnetic surveys over several targets.

Contact Diamond Corporation (53%), in a joint venture with Trigon Exploration Canada Ltd. (47%), has carried out programs of ground prospecting and in-fill till sampling to refine drill targets on its Ram and Shu properties. These properties are located 140 km northeast of Yellowknife.

Diamondex Resources Ltd. worked on the Lena West property (100%), located 310 km northwest of Norman Wells in the Sahtu Region, flying 20 000 line-km of high-resolution airborne magnetic survey over six target areas. Five blocks were flown at a 75-m line spacing using Fugro's Midas II

platform and one was flown by Firefly Aviation at a 100-m line spacing. During the field season, 1500 stream sediment samples were collected. Diamondex also explored its Lac des Bois claims, formerly part of the Lena West permit block. Ten detailed ground gravity grids were completed over 12 magnetic anomalies. Drilling of up to 20 geochemical and geophysical targets in seven areas commenced in the fall and will continue into the winter.

Diamonds North Resources Ltd. (50%) and Majescor Resources Inc. (50%) are flying a 4500-line-km high-resolution geophysical survey on their Banks Island property located 300 km northeast of Sachs Harbour.

GGL Diamond Corp. (100%) completed 16 ground geophysical surveys and 5 drill holes on its Doyle Lake property located 280 km northeast of Yellowknife. Several small kimberlite dykes, up to 0.5 m thick, were intersected in two holes.

GGL Diamond drilled five holes on its Courageous Lake claims, located 230 km northeast of Yellowknife. Three holes, drilled on the Bishop kimberlite, intersected variably textured kimberlite phases. Caustic fusion analysis of 78.2 kg of core recovered 11 microdiamonds. A ground gravity survey was conducted to further delineate the new pipe.

GGL Diamond flew an airborne geophysical survey over the Fishback property, located 65 km northwest of Yellowknife, and completed a ground gravity survey over portions of the Big Hole anomaly.

New Nadina Explorations Limited (57%), SouthernEra Resources (22%), and Archon Minerals (21%) carried out diamond drilling, ground magnetic and gravity surveys, and till sampling on their Monument property south of Ekati. A total of 1034 m of diamond drilling intersected three new kimberlites, the Rip, Nic and Sonja kimberlites, and further delineated the known DD17-11 kimberlite. The three new kimberlites, in addition to the previously discovered kimberlites, coincide with a 1.2-km linear magnetic low. Ninety-one till samples were also collected to follow up on unresolved indicator mineral trains on the property.

Patrician Diamonds Inc. explored its Sahtu permits with airborne geophysics and auger drilling. A 6500-line-km magnetic survey identified several magnetic anomalies aligned along two sub-parallel trends. A portable auger drill was used in an attempt to obtain bedrock samples from the magnetic anomalies. Microanalysis has returned results that indicate a kimberlite source for the material collected.

Pure Gold Minerals Inc., earning in from De Beers Canada, explored its Colville Lake property, located 243 km northeast of Norman Wells, completing ground geophysics over 16 magnetic anomalies picked from its 2005 airborne magnetic survey.

Sanatana Diamonds Inc.'s exploration program, located in the Sahtu region, focused on two main areas within the Mackenzie diamond project: the Kilekale Lake and Colville Lake area and the Lac des Bois area. Drill targets in the Kilekale Lake area were identified by a helicopter-borne low-level magnetic survey done at 100-m spacings, as well as by ground geophysical surveys in these areas. Eight of thirty targets identified in the previous exploration season were drilled. Glacial till sampling, ground geophysics, and drilling on other targets were conducted within the Mackenzie diamond project area.

Snowfield Development Corp.and Consolidated Gold-Win Ventures Inc. drilled 2376 m in 29 holes to delineate their Mud Lake sill, located 50 km south-southwest of Yellowknife, and intersected kimberlite in 23 of these holes. Snowfield initiated stripping and blasting a decline to obtain a bulk sample of the sill. Sampling and analysis of kimberlite indicator minerals on Snowfield's Ticho diamond project in the Sipper Lake area have given positive results.

Stornoway Diamonds was granted 26 three-year prospecting permits totaling just over one million acres in the southwestern DehCho region of the Northwest Territories. These permits represent three different properties: the Blackstone, Eestee and Shegonla properties. Stornoway has flown airborne geophysical surveys over these properties and plans to evaluate the results of this work for potential kimberlite targets.

Stornoway Diamonds and GGL Diamond drilled one 63-m hole to test a geophysical target on the Cris claim, located 160 km northeast of Yellowknife. The hole intersected dunite.

Uranium

Alberta Star Development Corp. completed a 16 708-line-km Terraquest airborne radiometric and magnetic gradiometery survey over the Eldorado Uranium Belt, east of Great Bear Lake. The survey was flown at a 100-m line spacing. An additional 923-line-km VTEM survey was flown over a northwest extension of the Contact Lake claims. Drilling of the properties is ongoing with 15 000 m completed as of mid-October 2006.

Bayswater Uranium Corporation (formerly Pathfinder Resources) and Uranium North Resources Corp. flew 7289 line-km of MEGATEM II electromagnetic survey over their Thelon UNR property, which is prospective for both diamonds and uranium.

Great Bear Resources plc conducted an airborne magnetic and radiometric survey, an induced polarization ground survey, and geological mapping on its Tommy Lake, Mariner and Sloan properties near Port Radium.

Solitaire Minerals Corp. flew a 774-line-km helicopter-borne VTEM survey over its Mystery Island property, which adjoins Alberta Star's Eldorado property.

Uravan Minerals Inc. and Cameco Corporation carried out exploration on conductors identified by the 2005 Fugro MEGATEM survey of the Boomerang uranium property. The follow-up Time Domain Electromagnetic (TDEM) geophysical survey confirmed the conductors and suggests that they may be associated with basement offsets. In July, a new Fugro MEGATEM and magnetic geophysical survey was flown and 2992 line km of data were collected at a 400-m spacing. Six diamond drill holes were completed totaling 1558 m of drilling.

Base Metals

Canadian Zinc Corporation advanced work at its Prairie Creek zinc-lead-silver mine. The site was re-opened in mid-May. At its peak, the 2006 program involved up to 60 employees and contractors, and proved to be the most extensive work program since the mine was built.

The underground program involved driving approximately 400 m of new decline tunnel and up to 10 000 m of underground exploration diamond drilling. A new cross-cut tunnel intersected a thick high-grade sequence of zinc-silver-lead-copper mineralization, which demonstrated the further continuity of the high-grade vein mineral resource. The overall grade of the intersection was calculated at 21.3% zinc, 17.02% lead, 1.2% copper and 413 g/t (12 oz/ton) silver over a true thickness of 6.5 m.

Metallurgical studies were initiated and a large bulk sample was excavated and shipped to SGS Lakefield Laboratories for detailed testing. Engineering studies associated with the access road were completed. Site care, maintenance and environmental monitoring activities, and training programs were carried out.

A surface exploration program involving the diamond drilling of 11 holes was undertaken on Zone 8, 5 km from the mill site. All eight holes intersected vein mineralization with significant grades of zinc, lead and silver, and confirmed the continuation of the Prairie Creek vein system 5 km south of the mine.

Fortune Minerals Limited completed a 3000-t bulk sample on its NICO project located 65 km north-northeast of Wha Ti. The company also advanced a 750-m decline to a depth of 145 m and completed approximately 100 additional metres of drifting off the ramp.

Pacifica Resources Ltd. continues to advance its Selwyn zinc-lead project (formerly Howard's Pass) that straddles the Yukon-Northwest Territories border. The 2006 program consisted of 116 drill holes totaling 21 611 m. The program is aimed at demonstrating the validity of historical data, providing in-fill drilling for resource definition, and step-out drilling to expand the known resource and area of mineralization.

Tamerlane Ventures Inc. entered the permitting and feasibility stage on its Pine Point zinc-lead property east of Hay River (Land Use Permit MV2006C0014 and Water Licence MV2006L2-0003). The project is undergoing an environmental assessment and a Final Terms of Reference has been issued. Tamerlane plans to use a freeze curtain around the perimeter of the project. A 1-Mt bulk sample will then be extracted with open-stope and drift-and-fill methods using a conveyor and rubber tire mobile equipment. Dense media separation technology will then be used to concentrate the ore and it will be shipped to market. Data collected from the bulk sample collection will be used to determine the viability of mining the other deposits on the property.

Eagle Plains Resources Ltd. obtained 5700 sample pulps from Cordilleran Engineering from a regional geochemical exploration program carried out in the mid-1970s. The samples cover its Selwyn Basin lead, zinc and silver showings. The company will use the new analysis of these samples and existing public analysis to guide exploration.

Great Northern Mining and Exploration Inc. conducted geophysics, sampling and diamond drilling on its Umingmak project on Victoria Island.

Kodiak Exploration Ltd. continues to explore its Caribou Lake nickel-copper-PGE property through mapping, prospecting, and a 2400-line-km airborne VTEM survey followed up with ground magnetic and horizontal loop electromagnetic surveys. More than two-thirds (33/50) of the drilled holes contain sulphide intersections with more than 0.1% nickel.

Phelps Dodge and Kaska Minerals Corporation explored for copper on their Keele River property, located in the Mackenzie Mountains (west-central Northwest Territories), conducting reconnaissance work, prospecting, sampling, and soil geochemistry.

Gold

Tyhee Development Corp. also continued drilling on its Ormsby gold property and, by late September, had drilled 21 290 m in 110 holes. The program is focused on extending the Ormsby North, Ormsby South, Bruce Lake, and West zones. The company also released a resource estimate of 1 million oz of gold (measured and indicated) for its Yellowknife gold project.

In March 2005, Tyhee applied for a Water Licence (MV2005L2-0003) to operate an underground mine, mill and camp 90 km east of Yellowknife at its Yellowknife gold project. The application was referred to Environmental Assessment in May 2005 and a Terms of Reference was issued. The next step, a Developer's Assessment Report from Tyhee, is pending. Recent work by Tyhee has concluded that an open pit may be the most effective means of extraction. The application may be withdrawn and a new application submitted given the change in the scope of the project.

Tyhee Development Corp. staked a new property, the Big Sky property, 17 km north of Yellowknife. Prospecting and collection of grab samples led to this latest discovery, which lies in close proximity to the Giant mine leases.

Seabridge Gold Inc. continued to evaluate its Courageous Lake deposit, 240 km northeast of Yellowknife. In June, the company commenced a 7500-m core drill program designed to expand the project's known gold resource and to define the new Mitchell zone identified in previous work.

Viking Gold Exploration Inc. collected 1034 bog and soil samples on its Viking zone, immediately south of the Ormsby zone, and has identified targets for a winter drill program.

2.13 NUNAVUT[26]

Introduction

Interest in Nunavut's mineral potential remained strong in 2006 with industry investing close to $200 million in exploration. The sustained high level of prices is driving exploration for commodities such as diamonds, gold, base metals, nickel, PGE, iron, and uranium.

In this review, exploration activity is arranged by region (Kitikmeot, Kivalliq, and Qikiqtani/Baffin) and by commodity. In the interest of space, only the more advanced projects are described herein. Full coverage of exploration projects is available in the *Nunavut Mining and Mineral Exploration Overview 2006*, which can be obtained from any of the agencies listed below.

Land Tenure in Nunavut

The territory of Nunavut was created in April 1999 as a result of the Nunavut Land Claims Agreement (NLCA), the largest Aboriginal land settlement in Canadian history. Spanning 2 000 000 km^2, Nunavut has 25 communities and an approximate population of 30 000 people. Inuit represent 85% of Nunavut's population. Inuit culture is inherently connected to the land, shaping government, business, and day-to-day life.

In addition to the creation of the new territory, the NLCA gave Inuit fee simple title to 356 000 km^2 of land. There are 944 parcels (16% of Nunavut) of Inuit Owned Lands (IOL) where Inuit hold surface title only (surface IOL). The Government of Canada or "Crown" retains the mineral rights to these lands. Inuit also hold fee simple title including mineral rights to the remaining 150 parcels of IOL (subsurface IOL), which total 38 000 km^2 and represent approximately 2% of the territory. Surface title to all IOL is held in each region by one of the three Regional Inuit Associations (RIAs) while Inuit subsurface title is held and administered by Nunavut Tunngavik Incorporated (NTI). NTI issues rights to explore and mine through its own mineral tenure regime. Mineral rights (mineral claims or leases) that existed at the time of the signing of the NLCA – known as grandfathered rights – continue to be administered by Indian and Northern Affairs Canada until they terminate or the holder transfers its interests to the NTI regime. For both surface and subsurface IOL, access to the land, through a Land Use Licence or Commercial Lease, must be obtained from the appropriate Regional Inuit Association. The Crown owns mineral rights to 98% of Nunavut. INAC administers these rights through the Canada Mining Regulations (CMR). This includes surface IOL, for which access to the land must be obtained from the RIAs as explained above.

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[26] This overview is a combined effort of four partners: Minerals and Petroleum Resources Division, Government of Nunavut; Mineral Resources Division, Indian and Northern Affairs Canada; Department of Lands and Resources, Nunavut Tunngavik Incorporated (NTI); and the Canada-Nunavut Geoscience Office. For more information, please contact Eric Prosh (Government of Nunavut) by telephone at 867-975-7827 or by e-mail at eprosh@gov.nu.ca.

Significantly, the NLCA is a final agreement whereby all land claims in Nunavut have been settled with the Inuit of Nunavut, thus providing an unmatched level of land tenure certainty. However, land claims overlapping Hudson Bay and the southernmost Kivalliq region are being negotiated with residents of northern Quebec and northern Manitoba, respectively.

Indian and Northern Affairs Canada

Indian and Northern Affairs Canada (INAC) administers mineral tenure on Crown land in Nunavut. This is done through the Nunavut Regional Office (NRO) in Iqaluit by the Mineral Resources Division and the Mining Recorder's Office (MRO) of the Land Administration Division.

As an advocate of sustainable resource development in Nunavut, INAC's Mineral Resources Division:

- Participates in and provides technical advice for environmental reviews;
- Reviews assessment reports filed by mining and exploration companies to ensure compliance with the Canada Mining Regulations (CMR);
- Co-manages the Canada-Nunavut Geoscience Office (CNGO), together with Natural Resources Canada and the Government of Nunavut;
- Maintains a digital archive of assessment data filed in Nunavut dating back to the 1940s;
- Promotes mineral exploration within the territory through community outreach, publications, professional networking, and events such as Nunavut Mining Week;
- Completes targeted geoscience in conjunction with CNGO and/or industry.

The MRO administers all other aspects of mineral tenure on Crown land in Nunavut. Administration of these rights is regulated by the CMR under the *Territorial Lands Act*. The MRO also administers coal tenure under the Territorial Coal Regulations and is the main point of contact to acquire Crown mineral or coal tenure. As well, the MRO sells claim maps and claim tags, and assists individuals and companies in interpreting the Canada Mining Regulations with information on how to keep their properties in good standing.

In February 2006, 161 prospecting permits were issued by the MRO, constituting over 6.4 Mha of land. At the time of writing, over 32.8 Mha of Nunavut were covered by prospecting permits, mineral leases and mineral claims.

Government of Nunavut

The Government of Nunavut (GN), through its Department of Economic Development and Transportation (ED&T), envisages a vibrant and sustainable minerals industry based on the "triple bottom line" concept, where success in the industry is measured by: 1) adherence to best environmental practices; (2) the sustained flow of benefits to local residents; and (3) the return of healthy profits to shareholders.

ED&T is working to ensure that all Nunavummiut are in a position to benefit from these coming opportunities, and that they have the option of becoming full participants in developments in the territory. At the same time, it is recognized that exploration and mining companies have the option of investing in many jurisdictions throughout the world. Therefore, ED&T is committed to working with its partners in NTI and the Government of Canada to make the legislation, policies and regulatory environment of Nunavut efficient, internationally competitive, and attractive to investors.

The Department is headquartered in Iqaluit with Resident Geologist Offices in Arviat and Cambridge Bay. Current Government of Nunavut initiatives include:

Nunavut Mineral Exploration and Mining Strategy

To maintain Nunavut's position as a jurisdiction of choice for mineral investment, the GN has developed the Nunavut Mineral Exploration and Mining Strategy, which provides a framework of policies and actions to be implemented to help retain the territory's strong position in international investment. Most notably, the Strategy addresses Nunavut's regulatory and taxation regimes, work force training, infrastructure development, and environmental baseline availability.

Over the past two years, during the preparation of the Strategy, the GN consulted with stakeholders to understand their views on a wide range of mining and exploration issues. Nunavummiut from across the territory, Inuit organizations, institutions of public government, the Government of Canada, community governments, other GN departments, private Nunavut-based businesses, and Nunavut Arctic College were participants in these consultations and provided strong and valuable input into the Strategy.

The views expressed in these consultations have been compiled and form the basis of the *Nunavut Mineral Exploration and Mining Strategy*, to be released in early 2007. This document clarifies the GN's position on mining and exploration, and will guide the government as it deals with the opportunities and challenges that arise from development of the territory's mineral wealth.

Nunavut Prospectors' Program (NPP) and Introductory Prospecting Course

ED&T provides technical and financial assistance to Nunavummiut with demonstrated prospecting skills to carry out their own prospecting projects. The program began in 1999 and, this year, the amount of financial assistance available for each prospector has been increased from $5000 to $8000 annually.

Every year, ED&T geologists present a six-day Introductory Prospecting Course to interested residents in communities throughout the territory. Since 2000, the course has been offered in each community with nearly 500 graduates to date. Graduates of the course often apply for NPP grants and are sought after as field assistants on mineral exploration programs.

Community Minerals Education and Training

ED&T works with many other stakeholders, including the Department of Education, the Government of Canada, and the mining and exploration industries, in a number of programs designed to inform Nunavummiut of all ages on opportunities in the minerals industries. ED&T programs and information include: the Nunavut High School Math and Science Awards Program, a Mineral Exploration Field Assistant's Course, a Nunavut Mine Training Focus Group, Earth Sciences and Mining Teacher Workshops, Careers in Mining School and Community Presentations, a mineral exploration company contact list for communities, and the Nunavut Science Outreach Network.

Nunavut Tunngavik Incorporated

Nunavut Tunngavik Incorporated (NTI) is the Inuit corporation responsible for overseeing implementation of the NLCA. NTI's mandate includes safeguarding, administering and advancing the rights and benefits of the Inuit of Nunavut to promote their economic, social and cultural well-being through succeeding generations. The Lands and Resources Department of NTI is responsible for the implementation of Inuit responsibilities related to the management of Inuit Owned Lands (IOL), the environment, minerals, oil and gas, and marine areas.

There are two forms of mineral tenure that grant exclusive rights on Subsurface IOL administered by NTI. These are the Inuit Owned Lands Mineral Exploration Agreement (usually referred to as the "Exploration Agreement" or "EA") and the Inuit Owned Lands Mineral Production Lease (referred to as the "Production Lease"). The Exploration Agreement grants a company or individual the exclusive right to explore and prospect for minerals (excluding oil and gas, and specified substances such as construction materials and carving stone) on a portion of Subsurface IOL. This area, referred to as the Exploration Area, is similar in many ways to a mineral claim under the CMR. The Production Lease grants the holder of an Exploration Agreement the right to produce minerals from a portion of the Exploration Area known as the Production Lease Area.

Since 1999, NTI has had in place a system of application that does not require staking when applying for an Exploration Agreement. Rather, the application requires only a description of the Exploration Area based on latitude and longitude. The applicant must submit to NTI a completed application form, *Application for an Inuit Owned Lands Mineral Exploration Agreement* (available on request from NTI or from the Lands Department web site at www.ntilands.com).

It should be noted that although the process described here normally applies, NTI, as a private organization, has complete discretion on whether it will issue an Exploration Agreement (or other agreement), what the process will be for obtaining an agreement, and what the terms of the agreement will be. The terms may include, for example, NTI holding a direct interest in a project.

Under the standard terms, successful applicants, upon executing the new Exploration Agreement and submitting the first year's annual fees, will be granted the exclusive right to explore for minerals on the Exploration Area. In order to gain access to the land, however, the applicant must obtain a surface right issued by the Regional Inuit Association (RIA).

NTI currently has 54 active Exploration Agreements with prospectors and exploration and mining companies. These cover more than 12% of the total subsurface IOL. (In addition, grandfathered claims and leases comprise approximately 2% of all subsurface IOL.) Holders of Exploration Agreements are required to submit annual exploration work reports to NTI that remain confidential for a period of up to three years. Many of the advanced exploration projects in Nunavut fall on subsurface IOL.

Canada-Nunavut Geoscience Office

The Canada-Nunavut Geoscience Office (CNGO) is a partnership between the Geological Survey of Canada (GSC), Indian and Northern Affairs Canada (INAC), and the Government of Nunavut's Department of Economic Development and Transportation (ED&T). The mandate of the CNGO is to provide accessible geoscience information and expertise in Nunavut in support of responsible development of mineral and energy resources, education, and training opportunities, and to assist with Geographic Information System (GIS) requirements of Nunavut-based partners. In 2006, the CNGO participated in multi-component field-based projects, was a principal partner in developing Web-based data delivery (nunavutgeoscience.ca), and provided GIS, cartographic, and Remote Predictive Mapping (RPM) support.

CNGO Projects

CNGO projects are designed to ultimately improve the quality of life for Nunavummiut, allowing them to gain economic and social benefits from responsible development of mineral and energy resources in Nunavut. The purpose of each project is to reduce the risk of investment and improve the chances of successful discoveries by mineral and energy exploration companies, and to increase and/or sustain current levels of exploration. Projects are designed to make a significant contribution to the geoscience knowledge base of Nunavut and address critical knowledge gaps. The projects are multi-faceted and may consist of components of ground-based field activities, including bedrock and surficial geology mapping; geophysical, geochemical and geochronological surveys; and

comprehensive data-compilation activities. In addition, the field-based projects include components of community consultations and public outreach activities.

SOUTHWEST BAFFIN INTEGRATED GEOSCIENCE PROJECT

The Southwest Baffin Integrated Geoscience Project (SWBIG) included regional-scale bedrock and surficial mapping in the Foxe Peninsula area on southwest Baffin Island during the 2006 field season. These activities, co-managed by the CNGO and the GSC, are intended to enhance mineral exploration and development opportunities in the region by improving the level of geoscience information. The area is underlain by supracrustal and intrusive rocks having significant exploration potential for base-metal mineralization. Targeted SWBIG field activities follow acquisition of a new, detailed aeromagnetic survey of the eastern part of the Foxe Peninsula in 2006.

SWBIG: Surficial Mapping

Understanding the surficial geology and glacial history are critical aids to mineral exploration in Nunavut, especially in poorly exposed regions. As part of the SWBIG project, the CNGO and the GSC, in collaboration with Simon Fraser and Dalhousie universities, initiated a surficial mapping project in 2006.

In 2006, SWBIG surficial geologists collected 250 ice-flow indicator measurements and 141 samples for till geochemistry and kimberlite indicator mineral analysis, and made more than 1100 field examinations that will be used as "ground-truthing" sites, essential for constructing the surficial geology map. To better understand ice flow, field examinations also included estimating the quantity and type (e.g., Precambrian vs. Paleozoic) of erratics. To quantify glacial chronology, samples were collected for radiocarbon analysis, Terrestrial Cosmogenic Nuclide dating, and Optically Stimulated Luminescence dating.

SWBIG: Bedrock Mapping

Bedrock mapping included 1:250 000-scale mapping of Precambrian units, and sampling for geochronology, geochemistry, and metal concentrations in mineralized outcrops. Rock units prospective for base- and precious-metal mineralization include a package of mafic-ultramafic ± intermediate volcanic rocks, informally named the Schooner Harbour Belt, that extends approximately 100 km from Schooner Harbour on the southwest coast of the Foxe Peninsula to the West Foxe Islands. Also prospective are a suite of mafic to ultramafic (meta-peridotite) rocks that intrude Paleoproterozoic metasedimentary rocks correlated with the <1.93 Ga Lake Harbour Group. Some of the metasedimentary units are conspicuously sulphide-bearing, providing compelling exploration targets where ultramafic rocks intrude a sulphide-bearing metasedimentary host.

In addition to assessing some of the traditional exploration targets for metals, the bedrock mapping team also attempted to gain a better understanding of the geological context of carving stone occurrences. In Cape Dorset, renowned for producing Inuit art, carving is a $3 million per year industry. In the 2006 field season, two distinct settings for carving stone were identified. The first is deformed and hydrated ultramafic rock, generally occurring as peridotite sills, but also as ultramafic flows, yielding a dark green to black carving stone. The second occurrence is a skarn rock derived from metacarbonate, which produces a highly valued yellow-green carving stone. Potential new sources of both types of carving stone were identified in coastal regions of the study area.

In 2006, the bedrock and surficial mapping projects were assisted by Remote Predictive Maps (RPM) produced in advance of field work. The RPM products were produced by compiling and integrating new and archival geophysical and geological data, in addition to Landsat imagery and hyperspectral data. Field work in 2006 also included spectroscopic "ground-truthing" for hyperspectral analysis.

SWBIG: Traditional Place-Names Maps

The CNGO is committed to providing GIS expertise to communities and researchers in developing traditional place-names maps. The SWBIG study area, which includes the Cape Dorset area, is a culturally rich region of Nunavut. To record and preserve Inuit culture, SWBIG and the CNGO are assisting researchers (Bowdoin College, Maine) to document locations of Inuit sites, travel routes, place names, and traditional land uses in the SWBIG project area.

Web-Based Data Delivery (www.nunavutgeoscience.ca)

Working with INAC, the GSC, and with assistance from the Northwest Territories Geoscience Office (NTGO), the CNGO developed and implemented a data delivery project in 2006. Nunavutgeoscience.ca is intended to be the "single-door" Web-entry point for clients looking for geoscience data from Nunavut. This site will help meet demands for searching, viewing and accessing integrated spatial data and other types of geoscience data (e.g., assessment files, mineral occurrences, maps [MIRAGE], reference lists), and to place Nunavut in a competitive position serving a global mineral exploration industry. This is a multi-partnered, collaborative project involving geologists, compilers, data managers, and IT specialists from the CNGO, INAC (Iqaluit), the GSC, the NTGO, and NTI. The first components of Nunavutgeoscience.ca went on-line in September 2006.

BORDEN BASIN PROJECT: BASE-METAL MINERALIZATION, NORTHERN BAFFIN ISLAND

The Borden Basin project is a collaborative project between Laurentian University and the CNGO. The project began in 2003 and will provide a regional context and new interpretations of mineralization in the Milne Inlet Graben. The Borden Basin is a Mesoproterozoic aulacogen comprising three northwest-trending grabens that developed on Archean (Rae domain) rocks. Carbonate strata of the Bylot Supergroup host numerous base-metal showings, including the zinc-lead-silver deposit mined at Nanisivik from 1976 to 2002. The stratigraphy and sedimentology of the basin require re-study, incorporating new knowledge in the field of Precambrian carbonates. A better understanding of the age and factors influencing mineralization will be essential for directing renewed exploration in the Borden Basin.

Nunavut Stratigraphy: Ordovician-Silurian Biostratigraphy and Hudson Bay Thermal Maturation Studies

Samples from exploration wells of Ordovician-Silurian rocks of the Hudson Bay offshore and Lowlands are being studied to evaluate thermal maturity and hydrocarbon potential. The study will result in improved biostratigraphic control for the region. Thermal maturity is being evaluated using conodont CAI and Rock-Eval Pyrolysis methods.

Summary of Exploration Activities, 2006

In the interest of space, only the more advanced projects are described herein, but the complete list of active projects is shown in map form (**Figure 40**).

Kitikmeot Region

The Kitikmeot region spans the western and northern mainland of Nunavut, and parts of Victoria, Prince of Wales, King William, and Somerset islands. Kugluktuk and Cambridge Bay are the largest communities and provide services to exploration projects.

The Kitikmeot region is geologically diverse and commodities being sought are varied with over 60 active exploration projects. Gold and diamonds were the two primary exploration targets in the Kitikmeot region. A major highlight was the official opening of Nunavut's first diamond mine, the Jericho mine. Development plans for production at the Doris North gold deposit in the Hope Bay

Figure 40
Location of Active Projects in Nunavut, 2006

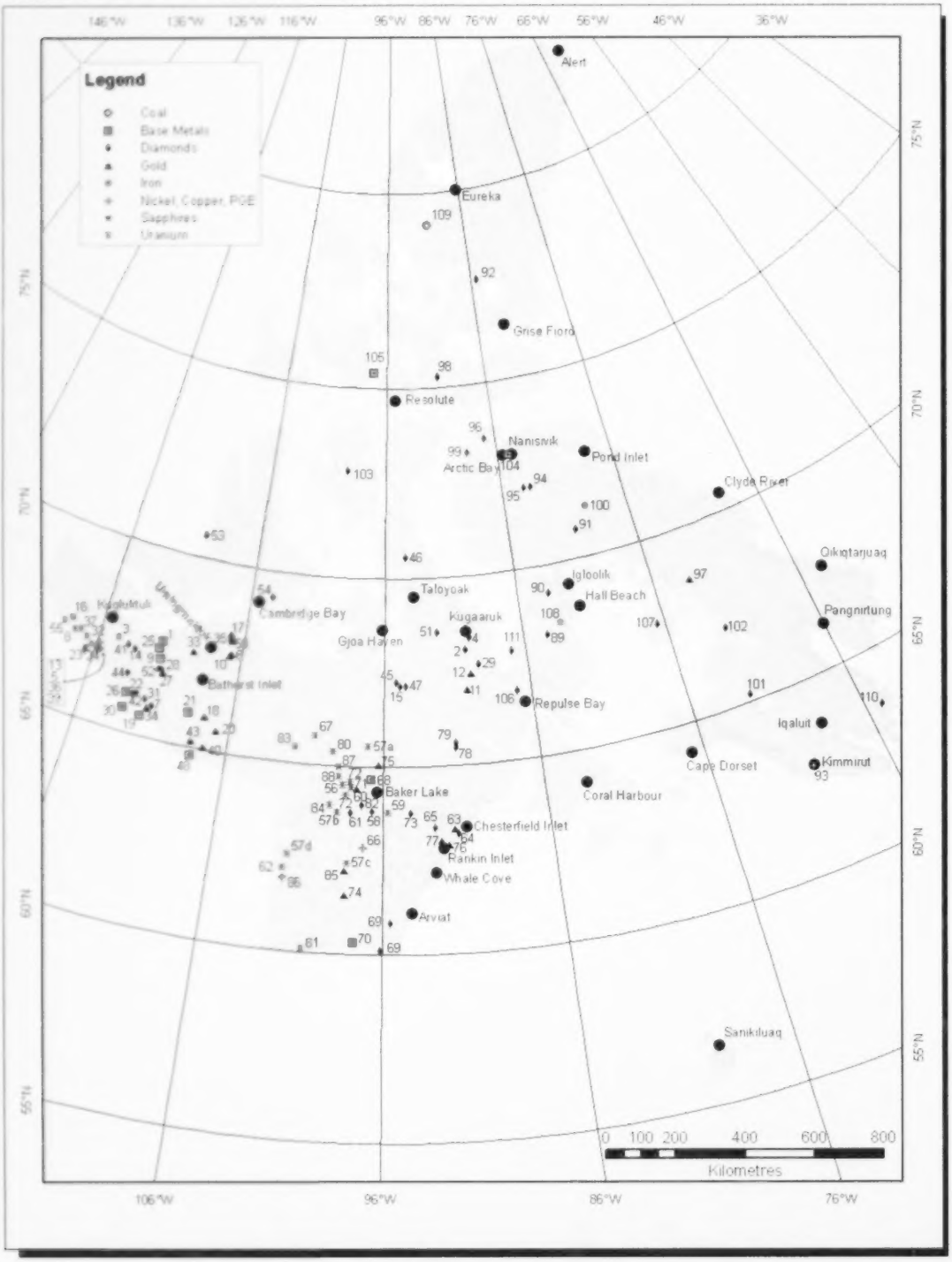

Figure 40 (cont'd)

ID	Project	Commodity	Operator
EXPLORATION PROJECTS IN THE KITIKMEOT REGION			
1	Anialik	Cu-Zn-Ag-Au	Strongbow
2	Amaruk	Diamond	Diamonds North
3	Asiak River	U	UNOR
4	Barrow	Diamond	Indicator Minerals, Hunter
5	Bear Valley	U	Adriana, UNOR
6	Boston (Hope Bay)	Au	Miramar
7	BRSC/WM	Diamond	Nordic
8	Cameco Option	U	Cameco, UNOR
9	Canoe Lake	Cu-Zn-Ag-Au	Strongbow
10	Chicago	Au	Maximus, Miramar
11	Committee Bay	Au	Committee Bay Resources
12	Committee Bay Northeast	Au	Strongbow
13	Coppermine River	U	UNOR
14	Coronation Gulf (Artemisia)	Diamond	Ashton, Vaaldiam
15	Darby	Diamond	Indicator Minerals, Hunter, Teck
16	Dismal Lake	U	Triex, Pitchstone
17	Doris (Hope Bay)	Au	Miramar
18	George Lake	Au	Dundee Precious Metals
19	Gondor	Zn-Cu-Pb-Ag-Au	Wolfden
20	Goose Lake	Au	Dundee Precious Metals
21	Hackett River	Ag-Zn (Pb-Au-Cu)	Sabina Silver
22	Heeqou	Diamond	Diamondex
23	Hepburn	Diamond	Diamonds North
24	Hepburn North	U	Uranium North
25	High Lake	Zn-Cu-Pb-Ag-Au	Wolfden
26	Hood	Zn-Cu-Pb-Ag-Au	Wolfden
27	Hood River	Au	Golden River
28	Hood River Claims	Diamond	Tahera
29	IC	Diamond	Contact, Trigon
30	Izok	Zn-Cu-Pb-Ag-Au	Wolfden
31	Jericho Diamond Mine	Diamond	Tahera, Teck Cominco
32	Kendall River	U	Triex, Pitchstone, Aramis
33	Lach	Au-Cu-Bi	Kaminak Gold
34	Lupin	Au	Wolfden
35	Madrid (Hope Bay)	Au	Miramar
36	MIE	Ni-Cu-PGE-Au	Adriana Resources
37	Mountain Lake	U	Triex, Pitchstone
38	Mountain Lake Option	U	Triex, Pitchstone, Ur-Energy
39	Muskox	Ni-Cu-PGE, Au	Silvermet, Prize
40	Needle/BR	Au	Kaminak Gold Corp
41	Peregrine	Diamond	Diamondex, Stornoway
42	Polar	Diamond	Tahera, De Beers
43	Regan Lake	Au	Strongbow
44	Rockinghorse	Diamond	Tahera, De Beers
45	Sakari	Diamond	Diamonds North, Shear
46	Sanagak	Diamond	Indicator, Hunter
47	Siku	Diamond	Diamonds North, Arctic Star
48	Silvertip	Zn-Cu-Pb-Ag-Au	Strongbow
49	TIM	Diamond	Trigon, Committee Bay, Indicator
50	Twin Peaks	Au	Maximus, Miramar
51	Ualliq	Diamond	Diamonds North, Int'l Samuel
52	Ulu	Au	Wolfden
53	Victoria Island (D)	Diamond	Diamonds North
54	Victoria Island (P)	Diamond	Pure Diamonds, De Beers
55	West Dismal	U	Triex, Pitchstone, Ur-Energy
EXPLORATION PROJECTS IN THE KIVALLIQ REGION			
56	Aberdeen	U	Cameco, De Beers
57a	Amer Lake	U	Uranium North
57b	Tasiq	U	Uranium North
57c	South Baker	U	Uranium North
57d	Kazan	U	Uranium North
58	Aumaluuktuuk	Diamond	Stornoway
59	Baker Basin	U	Pacific Ridge, Kaminak

Figure 40 (cont'd)

ID	Project	Commodity	Operator
EXPLORATION PROJECTS IN THE KIVALLIQ REGION (cont'd)			
60	Baker Lake Gold	Au	Tanqueray
61	Baker Property	U, diamond	Majescor, De Beers, Uranium World
62	Bugs	U	Ur-Energy, J.D. Charlton
63	Churchill (K)	Au	Kaminak Gold
64	Churchill (S)	Diamond	Shear, Stornoway, BHP
65	Churchill West	Diamond	Int'l Samuel, Shear, Stornoway, BHP
66	Ferguson Lake	Ni-Cu-PGE	Starfield
67	Gary Lake	U	Uravan
68	Greyhound Lake	Ag, Zn-Cu-Pb-Au	Interpid Minerals, Aura Silver
69	Hyde	Diamond	Stornoway
70	Keewatin	Zn-Cu-Pb-Ag-Au	BHP, Tri Origin
71	Kiggavik	U	Areva Resources, Dae Woo, JCU
72	Kiggavik North and Kiggavik South	U	Forum Uranium, Superior Diamonds
73	KMD	Diamond	Ripple Lake
74	Matrix Gold	Au	Kaminak, Pacific Ridge
75	Meadowbank	Au	Cumberland Resources
76	Meliadine East	Au	Comaplex
77	Meliadine West	Au	Comaplex
78	Nanuq	Diamond	Peregrine
79	Nanuq North	Diamond	Dunsmuir, Indicator Minerals
80	North Thelon	U	Bayswater, Strongbow
81	Nueltin Lake	U	Cameco
82	Pitz Lake	Diamond	Kennecott
83	Ruby Hill	U	Western Energy
84	SW Kiggavik, Cent. Kiggavik, Itza Lake, Amer Lake	U	Bayswater
85	Sy	Au	Kaminak Gold
86	Target 87	Ni-Cu-PGE-Au	BHP Billiton, Jaguar Nickel
87	Thelon Basin	U	Titan
88	Turqavik	U	Cameco
EXPLORATION PROJECTS IN THE QIKIQTANI REGION			
89	Alexis	Diamond	Stornoway, BHP Billiton
90	Aviat	Diamond	Stornoway, BHP Billiton, Hunter
91	Baffin Island	Diamond	Pure Diamonds, De Beers
92	Baumann	Diamond	Stornoway, Indicator Minerals
93	Beluga Sapphire	Gemstones	True North
94	Borden (I)	Diamond	Indicator Minerals
95	Borden (P)	Diamond	Patrician Diamonds
96	Brodeur	Diamond	Diamondex, Kennecott
97	Central Baffin	Au	Commander, BHP Billiton, Xstrata
98	Eden Point	Diamond	Pure Diamonds, De Beers
99	Jackson Inlet	Diamond	Twin Mining (Diamondco)
100	Mary River	Fe	Baffinland
101	MIP	Diamond	Contact, Stornoway
102	Mirage	Diamond	Peregrine
103	Muskox Hill	Diamond	Pure Diamonds, De Beers
104	Nanisivik	Zn-Ag	Breakwater Resources
105	Polaris	Zn-Pb	Teck Cominco
106	Qilalugaq	Diamond	Stornoway, BHP Billiton
107	Prince Charles Island	Diamond	BHP
108	Roche Bay	Fe	Roche Bay
109	Strand Fiord Coal	Coal	James Bay Energy
110	Timmijuuq	Diamond	Peregrine
111	Wales Island	Diamond	Stornoway, Strongbow, BHP

Source: Minerals and Petroleum Resources Division, Government of Nunavut.

Belt are in the permitting stage with plans to open the mine in 2008. The George and Goose lakes gold deposits are the focus of an active advanced exploration program.

Recent diamond exploration covered parts of the western mainland and projects were active on Victoria and Prince of Wales islands. The Boothia Peninsula and areas south of Kugaarak in the eastern Kitikmeot region had strong exploration activity with a new diamond district being identified in 2005.

Traditional exploration targets in the region have included massive sulphide-hosted base metals. Projects in the Slave Province include Gondor, High Lake, Hood, Izok (all base metals), and the Ulu gold deposit. The High Lake deposit, the most advanced of these projects, is in the permitting process for the development of a mine. The Hackett River base- and precious-metal deposit is also returning impressive numbers.

Uranium exploration is seeing a resurgence of interest in Nunavut, specifically in the Hornby Bay Basin in the Kitikmeot region, with programs ranging from initial exploration efforts to well-developed drill programs.

KITIKMEOT DIAMOND PROJECTS

Jericho Diamond Mine

The year 2006 saw an outstanding event in exploration for the territory – the opening of Jericho, Nunavut's first diamond mine. Mine construction was substantially completed during 2005 and the first diamonds were produced in January 2006. Commercial production started on July 1, 2006, and Tahera Diamond Corp. recognized its first revenues from diamond production in the third quarter. The mine life is estimated at nine years with a planned average rate of 2000 t/d. Processed tonnes and carats produced during the second quarter of 2006 rose to 147 000 t and 98 600 ct, respectively, from 63 000 t and 28 318 ct in the first quarter; carat production decreased slightly to 96 500 ct in the third quarter of 2006.

The overall expected grade of the Jericho kimberlite resource material remains at 0.85 ct/t. A sparkling highlight of production to date is the recovery of a 59-ct gemstone with excellent shape and good colour and clarity valued in excess of US$400 000.

The company signed a formal Inuit Impact and Benefit Agreement (IIBA) with the Kitikmeot Inuit Association (KIA) prior to the opening of the mine. Tahera also entered into an agreement with Tiffany & Co. for the purchase and marketing of the diamonds, and Tiffany provided $35 million to assist with the project's financing. In mid-November 2006, Tahera announced a strategic alliance with Teck Cominco Limited in which Teck Cominco invested $30 million in a private placement. This agreement gives Teck Cominco 16% of the shares of Tahera on a non-diluted basis and 24.9% on a fully diluted basis.

Polar Project

Tahera and De Beers Canada Inc. have a joint-venture agreement on the Polar project on land adjacent to the Jericho property. The significantly diamondiferous Muskox kimberlite is situated on this property. In addition to the known kimberlites, the property also hosts a number of unresolved kimberlite indicator mineral trains.

In 2006, Tahera conducted a large-scale kimberlite evaluation program with the exploration strategy for increasing reserves in the Jericho area. The Muskox kimberlite occupies a surface area of approximately 4 ha, 2.5 times larger than that covered by the Jericho kimberlite. Muskox is comprised of at least two volumetrically significant units, the MKU-A and the MKU-B units. Approximately 865 dry tonnes from MKU-A and 63 dry tonnes from MKU-B were extracted and

processed in 2006. The MKU-A unit yielded 13 890 stones representing 455.3 ct for a recovered sample grade of 0.53 ct/t. The MKU-B unit yielded 692 stones representing 21.8 ct for a recovered grade of 0.35 ct/t.

Both large-diameter (17.5 inches) reverse circulation (RC) drilling and core delineation drilling were undertaken with a budget of approximately $13 million. A total of 5730 m (21 holes) of core drilling penetrated the kimberlite to a maximum depth of 382 m and allowed for further interpretation of the body. The Muskox kimberlite is now interpreted to cover less surface area, be more voluminous at depth, and have steeper sides than previously thought. An updated estimate of the *in situ* tonnage of the body is 10-11 Mt to a depth of 200 m, and 15-16.5 Mt to a depth of 300 m.

Victoria Island Project

This property covers an estimated 440 000 ha in central Victoria Island and is trans-border with the Northwest Territories. Diamonds North Resources Limited and Teck Cominco had an earlier option agreement that terminated in 2005. Diamonds North now holds a 100% interest in a total of 39 kimberlites on the property.

Kimberlites and trends that have been identified include Galaxy, Jaeger, King Eider, Pintail, Sanderling, Sand Piper, Snow Bunting, and Turnstone. More than 80% of the kimberlites are diamondiferous, with several bodies returning significant diamond counts and favourable stone size distribution. Exploration efforts have focused on the 20-km-long Galaxy and 25-km-long King Eider confirmed kimberlite trends, two semi-parallel, northwest-southeast-trending structures 30 km apart. In 2006, Diamonds North received the complete 2005 diamond results for the King Eider kimberlite. These results from 1697.5 kg of drill core submitted by Teck Cominco, and 576.9 kg of drill core and a 1053.6-kg trench sample submitted by Diamonds North, returned, amongst other stones, a 0.31-ct diamond recovered from the trench sample. Diamonds North now considers that the best potential for Victoria Island is for small high-value deposits with the King Eider kimberlite having the potential of 4-5 Mt. With important targets such as the Snowy Owl kimberlite and the Southeast Galaxy trend, there is potential for an additional 15-20 Mt of kimberlite. Diamonds North plans to collect a 5- to 10-t drill sample from King Eider.

KITIKMEOT BASE-METAL PROJECTS

High Lake Project

The High Lake copper-zinc-silver-gold deposit (175 km east-southeast of Kugluktuk) is the most advanced, in terms of permitting, of all of Wolfden Resources Inc.'s projects in Nunavut. Wolfden submitted its comprehensive project proposal for the High Lake project to the Nunavut Impact Review Board (NIRB) and federal and territorial regulatory authorities in November 2006. This filing is the next step in the permitting process for the proposed High Lake mine. In submitting the documents, Wolfden requested that the NIRB consider the information provided in the project proposal to be sufficiently comprehensive for consideration as a full environmental impact statement.

The property consists of 15 leases (1710 ha) located mainly within a land claim on which both surface and subsurface rights belong to NTI. The indicated resource of 18 Mt, using a 2.5% copper-equivalent cut-off, averages 5.01% copper equivalent and these values place the High Lake deposit amongst the highest-grade undeveloped copper deposits in the world. The mineralized zones are named the AB, D, West, Sand Lake, WW, and Cairo zones.

The 2006 program in the High Lake area had a renewed focus on exploration. Drilling focused on the new showings of Sand Lake, WW and Cairo. The most favourable hole at Sand Lake intersected 45 m of mineralization with the best section assaying 3.29% copper across 15.05 m. This prospective horizon remains open at depth. Other work in 2006 involved continued engineering, geotechnical work, environmental programs, and feasibility at all of Wolfden's northern projects.

Izok Project

Wolfden Resources' Izok property is host to one of the highest-grade copper-zinc deposits in the world with an indicated resource of 14.4 Mt grading 2.52% copper, 1.28% lead, 12.94% zinc and 71 g/t silver, plus an inferred resource of 370 000 t grading 3.79% copper, 0.27% lead, 6.40% zinc and 54.2 g/t silver. Core samples from Izok indicate the deposit has potential for significant gallium with values returned up to 105 g/t. Wolfden has retained Wardrop Engineering Inc. to complete a full feasibility study for placing the Izok deposit into production. This feasibility study is expected in the second quarter of 2007.

Evaluation work to date shows that the majority of Izok can be mined by open-pit methods and suggests that the Lupin mill should be used for processing the ore. Using existing infrastructure would represent a major reduction in the capital cost and simplify permitting requirements for development of the Izok deposit.

A Land Use Permit from INAC and a Water Use Licence from the Nunavut Water Board have been granted to Wolfden, which allow construction of a new camp at Izok. Significant drilling programs are planned for the property. Geotechnical drilling will be completed for engineering and final open-pit mine designs. Exploration drilling to expand the deposit at depth where it remains open, and to better define inferred resources, will begin in the near future.

A new showing, the Point Lake zone, was found in 2006, 45 km south of, and in the same greenstone belt as, Izok. The surface expression of the zone is more extensive than the High Lake West zone. Grab samples returned assays of 2.04% copper, 9.00% zinc and 58 g/t silver, and 2.46% copper, 7.23% zinc and 70 g/t silver. Historical drilling (three holes) traced the mineralized horizon to the south; however, the prospective northern extension under Point Lake remains open.

KITIKMEOT GOLD AND PRECIOUS METALS PROJECTS

Committee Bay Project

The Committee Bay Greenstone Belt (300 km north of Baker Lake) is geologically comparable to the gold-producing greenstone belts of Red Lake, Timmins, and Kirkland Lake. Committee Bay Resources Ltd. holds more than 360 000 ha of land with prospective geology and controls over 85% of the belt.

In 2005, Committee Bay spent over $9 million on exploration. This work included detailed grid work and ground magnetic surveying over high-priority targets, and drill testing of the Raven and Three Bluffs zones. Significant mineralization was outlined at Raven, Three Bluffs, West Plains, Antler, and Anuri, although the total number of zones with gold potential exceeds 60. A near-surface high-grade inferred mineral resource of 1.3 Mt grading 10.2 g/t gold for 417 000 oz has been defined by 49 drill holes at Three Bluffs. Using a lower cut-off grade, this inferred mineral resource is expanded to 5.1 Mt grading 4.0 g/t gold for 657 000 oz. About 85% of these resources are within 120 m of surface and most of the high-grade mineralization is along a shallow plunging structure.

For 2006, Committee Bay budgeted $3 million for exploration. Drilling at Anuri outlined a broad alteration zone (up to 20 m wide) and gold over a 400-m strike length adjacent to a major structural zone. The alteration zone is geologically and geochemically similar to a high-grade gold- and silver-bearing boulder train discovered at Anuri in 2004. Drill core intersections in 2006 also contain highly anomalous silver, copper, bismuth and tungsten.

The West Plains gold showing is in the southwest corner of the greenstone belt, approximately 65 km southwest of the Raven occurrence. Mineralization is hosted in sheared iron formation and localized within a flexure in the shear zone. In 2006, drilling at West Plains confirmed a high-grade gold zone that is open down-plunge and to depth, extending over 200 m along strike and to 80 m

below surface. This zone also coincides with a strong electromagnetic (EM) anomaly that extends for 8 km along strike. Drilling returned intersections of 13.14 g/t gold over 8.0 m, 19.65 g/t gold over 2.0 m, and 8.39 g/t gold over 2.05 m.

George Lake/Goose Lake (Back River) Project

The Back River project is owned and operated by Dundee Precious Metals Inc. and is one of the larger gold projects within Nunavut (located 100 km south of Bathurst Inlet). The Back River deposits are quartz-vein hosted gold deposits found within Archean banded iron.

The most important properties in the Back River area are the George Lake and Goose Lake deposits with combined indicated resources of 1.4 million oz of gold and inferred resources of 600 000 oz of gold. Gold mineralization occurs in both the high-grade fold hinge zone and greywackes within the fold core. Much of the gold occurs as fine grains on sulphide boundaries, although visible gold, generally as small (<1 mm) isolated specks, is common in clearly defined bands within the iron formation.

Gold exploration in this area began in 1982 and various companies have worked the deposits. In early 2005, Dundee purchased the option to earn a 60% interest in the project and by year-end had invested $20.8 million. In mid-2006, the company purchased a 100% interest and conducted an extensive exploration program, spending over $17 million. This work was conducted to delineate extensions of previously defined mineralized zones at the two major deposits and to further explore targets at Boulder Pond, Boot Lake, and on the George Lake claim groups. Seventy-nine holes (24 030 m) in both step-out and in-fill drilling were completed. A total of 7546 line-km of airborne geophysics were conducted, bringing the total of geophysical data collected in 2005 and 2006 to 14 045 line-km. Dundee is also collecting environmental baseline data (hydrological, meteorological and fish studies, and bathymetry), and metallurgical test work is being conducted.

Hackett River Project

The Hackett River silver-zinc property (Sabina Silver Corporation) hosts at least eight known massive sulphide occurrences; the most significant are East Cleaver, Boot Lake, and the Main zone (also called "A" zone), with other important showings being the Knob Hill, Downie, Finger Lake and Jo zones. The property covers nine mining leases with an aggregate area of 12 250 ha. Hackett River (75 km south-southwest of Bathurst Inlet) is one of the largest undeveloped massive sulphide deposits in Canada.

Sabina recently expanded the indicated resources to 205 million oz of silver and 4.3 billion lb of zinc, with 305 Mlb of copper, 644 Mlb of lead, and 433 000 oz of gold (above a 5.0 oz/ton silver-equivalent grade cut-off). This new resource estimate is based on 300 drill holes with an aggregate length of 63 745 m. The company has also retained Wardrop Engineering to develop a preliminary economic assessment based on the strength of these new estimates.

Sabina had significant results from its 2006 drill program. The highlight was the partial delineation of a new discovery called the "Boot Lake Deep" trough. The structure contains true-width drill intercepts up to 50 m wide grading 12% zinc and 300 g/t silver. A total of 17 293 m (53 holes) were drilled as both in-fill and step-out work as all three main deposits remain open. In a recent deep step-out hole at Boot Lake, assays included 42.95 m of 8.35% zinc and 180.5 g/t silver with a second hole containing 49.85 m of 9.18% zinc and 141.6 g/t silver.

All deposits and showings are located at approximately the same stratigraphic interval and occur over a 6-km-long strike length. The East Cleaver, Boot Lake and Main zone deposits are hosted within a Mineral Horizon Member characterized by the presence of marble and/or calc-silicate, chert, and variable quantities of sulphides. Mineralization in each of the three massive sulphide deposits consists primarily of coarse-grained pyrite, pyrrhotite, sphalerite, chalcopyrite, galena, and

rare tetrahedrite and trace arsenopyrite. The Boot Lake, Finger Lake, Main zone and Jo zone deposits and showings are hosted within a southward-dipping stratigraphic sequence. The Knob Hill zone and East Cleaver deposit are found within an overturned anticline that plunges steeply to the west.

Hope Bay Project (Doris North, Madrid, Boston)

The Hope Bay gold project covers most of the entire Hope Bay greenstone belt and consists of mineral claims, mineral leases, and IOL Exploration Agreements with a combined total area of approximately 110 151 ha. The belt was again the focus of the largest exploration project in Nunavut in 2006 with Miramar Mining Corporation spending over $31 million.

The belt, 80 km long in a north-south direction and 7-20 km wide, is in the northeast portion of the Slave Structural Province (130 km southwest of Cambridge Bay). The belt and its deposits are Archean lode-gold-type, comparable to the prolific Abitibi Belt of central Canada. These belts are typically isoclinally folded, contain belt-parallel shear zones, and the deposits are characteristically associated with large-scale regional structures.

Significant gold deposits defined on this property include Doris North, Madrid, and Boston. All deposits and showings occur within, or in proximity to, a major structure or structural zone. Current estimates are total indicated resources of 17 834 000 t at 6.0 g/t gold (3.4 Moz of gold) and inferred resources of 34 197 000 t at 4.9 g/t gold (5.4 Moz of gold).

The Doris deposits (Doris North, Doris Central, Doris Connector) occur at an inferred inflexion in the Hope Bay structural break. Gold occurs within a steeply dipping quartz vein system in folded and metamorphosed pillow basalts. At the north end of the system (Doris North), the veins are folded into a doubly plunging anticline with the high-grade hinge zone lying close to the surface. Measured and indicated resources are 1.169 Mt at 19.3 g/t gold (726 000 contained oz) and inferred resources are 1.634 Mt at 14.5 g/t (766 000 contained oz). The Doris North project is currently in the permitting process with the mine scheduled to open in mid-2008 with a two-year mine-life.

The Madrid deposit area hosts the Rand, Naartok (Naartok East, Naartok West), and Suluk showings. The Madrid Trend corridor hosts the Rand Spur, Marianas, Patch 7, and Patch 14 zones. Gold mineralization is structurally controlled by a complex, large-scale zone traced for 11 km of intense strain and alteration termed the Deformation zone. Most resources lie within the northern 2 km of this zone. The 2006 drilling campaign (in-fill and expansion) indicates the potential for much larger-scale operations than previously recognized.

The Boston deposit, one of the largest known gold resources in the belt, is located near the south end of the belt and associated with a flexure in the Hope Bay structural break. A new zone, BN, with a style of mineralization not previously recognized at Boston, was discovered in 2006 north of known Boston resources (B2, B3, B4). Thirteen holes (3785 m) were drilled at BN and the pending results will help define a second phase of production following the proposed Doris North project. The current Boston resource, not including 2006 drilling, is 2 312 000 t of 10.7 g/t gold (indicated) and 2 431 000 t of 9.5 g/t gold (inferred).

KITIKMEOT URANIUM PROJECTS

Coppermine River and UNAD Projects

The Coppermine River property (100 km south of Kugluktuk) consists of two claim blocks referred to as the Coppermine Block and the East Block, with a total of 144 claims covering 125 000 ha in the Hornby Bay Basin. This basin offers unconformity-type uranium deposit potential and is underexplored in relation to the Athabasca Basin. Potential for other uranium deposits on the property include iron oxide-copper-gold (IOCG) and vein-type deposits. The structural setting of the property

area is similar to that of Cameco Corporation's Eagle Point deposit in the Athabasca Basin. UNOR Inc. has discovered several uranium zones on the Coppermine River claims, including Contact Lake, Wolf Creek, BOG, Hot Creek, and Alteration Zone Lake.

In 2006, UNOR drilled 10 additional holes on the BOG zone located in the southern panhandle of the claim block. All 10 holes had uranium mineralization in core with the best intersection to date being 0.12% U_3O_8 across 9.1 m. A ground magnetic survey and three induced polarization (IP) lines were completed and will guide 2007 drilling.

Detailed mapping and ground magnetic surveys were completed over the Alteration zone located in the southern panhandle of the claim block. Complex silicification and clay alteration within the Hornby Bay sandstone is controlled by a series of cross faults intersecting the southeastern marginal fault of a major graben. Two holes were drilled to test the zone at depth. The basal contact is approximately 800 m deep and multiple fault zones with clay-dravite alteration and anomalous uranium occur within the sandstone. Dravite, a boron-rich mineral, is found in many of the uranium deposits in the Athabasca Basin.

The UNAD project covers 19 427 ha of land adjacent to the Coppermine River project and is a 50:50 joint-venture project between UNOR and Adriana Resources Inc. In 2006, the companies confirmed high-grade uranium mineralization (7.281% U_3O_8) from subcrop in the Tabb Lake area.

Mountain Lake Property

The Mountain Lake property is located within the Hornby Bay Basin, 100 km south of Kugluktuk. Stratabound uranium mineralization is hosted within sandstone of the Proterozoic Dismal Lakes Group. Past workers completed 190 drill holes (approximately 22 000 m) on the project and defined the Mountain Lake uranium deposit. This deposit contains an inferred resource of 8.2 Mlb of U_3O_8, with an average grade of 0.23% U_3O_8, contained in 1.6 Mt of rock. The depth of mineralization is between 28 m and 136 m. An updated resource model is currently being developed using 2006 drill results integrated with historical data. Triex Minerals Corporation and Pitchstone Exploration Ltd. are 50:50 partners in the Mountain Lake property, with Triex as operator. Triex completed 20 drill holes on the property in 2006. Results confirmed the uranium mineralization within the deposit and extended it below Fran Lake. Grades of 0.1-0.3% U_3O_8 over widths of 1-4.5 m define the main deposit, with an envelope of 0.03-0.1% U_3O_8 over widths of 10-30 m. Anomalous uranium values were returned in drill core from testing the Jenny Lake area, northwest of the main deposit. This prospect is open to the north and west.

Kivalliq Region

The Kivalliq region includes the eastern mainland, Southampton Island, and several smaller islands. The communities of Rankin Inlet, Baker Lake, and Arviat are common staging points for exploration projects. More than 45 exploration projects were tracked in 2006, targeting a wide range of commodities: gold, diamonds, nickel-copper-PGE, uranium, and base metals. Current exploration targets include lode and iron formation hosted gold, epithermal gold, quartz pebble conglomerate hosted gold, mafic-ultramafic nickel-copper-PGE deposits, diamondiferous kimberlites, unconformity associated uranium, IOCG, and VMS mineralization.

Exploration for uranium increased significantly in 2006. The majority of the new land acquisitions within Nunavut in 2006 target geological settings favourable for uranium mineralization in the Kivalliq region. There were programs involving airborne geophysics, diamond drilling, mapping, prospecting, and community consultation.

The most advanced project in the Kivalliq region is Cumberland Resources Ltd.'s Meadowbank Gold project. In November 2006, the Minister of Indian Affairs and Northern Development

accepted the Nunavut Impact Review Board's (NIRB) recommendation that development of Cumberland's Meadowbank gold project should proceed.

KIVALLIQ DIAMOND PROJECTS

Churchill Diamond Project

The Churchill diamond project (Shear Minerals Ltd., Stornoway Diamond Corporation, BHP Billiton) comprises mineral rights to more than 3.64 Mha located between the communities of Rankin Inlet and Chesterfield Inlet. As operator, Shear conducted a multi-season program in 2006. It consisted of a spring drilling and ground geophysics program (8 drill holes and 145 line-km of ground geophysical surveys). Two new kimberlites were discovered. A summer program followed with 30 more drill holes intersecting five new kimberlites, 6715 line-km of ground geophysics, prospecting, and till sampling.

Till sample PST-03, collected late in the 2005 field season, returned 162 microdiamonds with kimberlite fragments in the oversize fraction. A ground magnetic survey, followed up with drill testing in 2006, confirmed a vertically dipping dyke over a 150-m length. From 22.8 kg of drill core sample, 303 diamonds were recovered.

The Notch kimberlite dyke was discovered by prospecting along a magnetic feature. It has a similar discontinuous magnetic signature extending more than 3 km. A mini-bulk sample of 6.1 t was collected with 836 diamonds recovered.

The Jigsaw kimberlite dyke has the highest G10 abundancies in its associated mineral train. Prospecting along the mineral train resulted in its discovery. It has a thin discontinuous magnetic signature over 1 km long. Based on the pits excavated for the mini-bulk sample, the dyke is about 1.5 m wide with a vertical dip. The mini-bulk sample weighed 5.8 t, with results expected in early 2007. Also, 157 diamonds were recovered from a 44.35-kg grab sample.

A magnetic signature greater than 6 km long marks the Kahuna dyke. It was drill tested in three locations along 4.5 km of strike length. Drill hole KD-26A intersected an 11.4-m interval of coarse-grained, highly macrocrystic pyrope-bearing kimberlite. In order to test the northern and southern extensions of the Kahuna trend, additional holes were drilled 2 km to the south (KD-25) and 2.5 km to the north (KD-32/32a) of the main Kahuna dyke; both locations intersected macrocrystic kimberlite. Samples were collected from two surface pits for a total sample weight of 3.6 t.

Qilalugaq Project

In July 2006, Stornoway announced plans to potentially earn a 50% interest in the 416 000-ha Qilalugaq property from BHP Billiton. Previously, 11 kimberlites had been discovered by BHP Billiton. The property is located 10 km north of Repulse Bay, astride the Rae Isthmus (Melville Peninsula).

Stornoway collected a 200-kg sample for caustic fusion and mineral indicator analysis, and a 4.2-t sample for dense media separation (DMS) analysis, from the A28 kimberlite, part of the Q1-4 complex (Qilalugaq 1, 2, 3 and 4 pipes, which coalesce to form a body with an approximate area of 14 ha). While collecting the larger kimberlite samples, mantle xenoliths in the cobble size range were recovered.

In 2006, 469 till samples were collected. Additional kimberlite float was found outside of known bodies. Prospecting resulted in the discovery of two new kimberlite dykes, Naujaat 1 and 2. These kimberlites represent two separate parallel linear structures and have been traced at surface over strike lengths of approximately 3000 m and 600 m; they average 4.5 m and 2.3 m in width, respectively. A 200-kg sample of Naujaat 1 was collected for microdiamond determination by caustic

fusion analysis and a further 950 kg of material was collected for macrodiamond extraction by DMS. Samples of Naujaat 2 were also extracted for microdiamond analysis.

KIVALLIQ GOLD PROJECTS

Baker Lake Gold Project

Tanqueray Resources Ltd.'s 100%-owned Baker Lake gold project covers 117 998 ha, spanning an area 70 km long by 10 km wide within the southern Archean Woodburn Group. This is the southern portion of the same group of rocks that hosts Cumberland Resources' Meadowbank Gold property.

An IP survey was carried out in the spring of 2006 to further enhance the selection of the drilling targets. A total of four zones were selected for drilling, including three zones previously undrilled (Vein 25, Musk Ox, and East Silver). A 10-hole, 1089-m diamond drilling and surface exploration program was completed in the summer. Assay results confirm the expansion of the area of gold mineralization discovered in 2005 on the Ayak Gossan zone. The 2005 and 2006 drilling programs have defined an area of gold-bearing stratigraphy with a down-dip length of approximately 350 m and a strike length of approximately 180 m. The complete extent of the mineralization has yet to be determined.

The exploration programs on Baker Lake during the 2004-06 field seasons resulted in the new gold discovery of the Ayak Gossan zone and approximately seven other surface zones of high-grade gold tenure. The mineralized zones returned more than 100 surface samples with values ranging from 10 g/t gold up to 190 g/t gold, including more than 50 samples returning greater than 20 g/t gold. The ongoing exploration continues to identify new areas or upgrades known zones. The 2006 exploration included the surface re-sampling of Ayak Gossan between drill hole AG06-05 and drill hole AG06-06. One outcrop sample returned 190 g/t gold, the highest-grade gold sample found to date on the property.

Meadowbank Project

The Meadowbank (Cumberland Resources Ltd.) gold deposits occur within the Archean Woodburn Lake greenstone belt, approximately 75 km north of Baker Lake, and represent the third-largest undeveloped gold resource in Canada. The stratigraphy consists of quartzite overlying komatiite, which in turn overlies intercalated felsic to intermediate volcanic rocks and iron formation. Regionally, four phases of deformation are recognized. The stratigraphy is folded into a northwest-trending, isoclinal, recumbent anticline sandwiched between two large granitoid intrusions.

Mineralization is hosted by interbedded iron formation and felsic to intermediate tuff, with subordinate orthoquartzite and ultramafic schist. Sulphides (pyrrhotite and pyrite) and gold occur within a structural fabric associated with early progressive isoclinal folding. Alteration includes sericitization, sulphidation, silicification and carbonatization. Six near-surface gold deposits have been identified in the project area: Goose Island, Third Portage and North Portage, Vault, Bay Zone, and PDF. The Connector zone links the Third and North Portage deposits (the three zones are collectively termed the "Portage" zone). In early 2005, updated resource figures were released as part of a feasibility study. Based on open-pit mining methods, measured and indicated gold resources stood at 23.3 Mt at 4.4 g/t gold, for 3.3 million contained oz, from the Portage, Goose Island and Vault zones.

The 2006 exploration program focused on increasing gold resources and reserves. The Cannu zone, a potential open-pit gold zone, was discovered in the fall of 2005, and an inferred mineral resource estimate was reported in early 2006 as 440 000 t at 6.0 g/t gold, for 85 000 contained oz. The Cannu zone gold mineralization represents a potential 350-m northern extension to the proposed Portage open pit, which contains an estimated 1.59 million oz of reserves. With the addition of Cannu, continuous mineralization has been defined over a strike length of approximately 2.15 km in the Portage

area. Systematic in-fill and step-out drilling completed during the 2006 program was successful in defining four distinct, high-grade lenses of mineralization (Keel, 305, Core, and East) at the Cannu zone, and an improved Cannu resource estimate will be determined.

The 2006 drill program also discovered the Goose South zone, located approximately 400 m south of the Goose Island deposit. Drill intersections yielded encouraging gold grades over narrow-to-moderate widths within a similar structural and stratigraphic setting as the Goose Island deposit.

Meadowbank is forecast to produce an average of 330 000 oz of gold per year over an eight-year mine life based on a bankable feasibility study and subsequent bank due diligence completed in December 2005. A production decision was made by the Board of Directors of Cumberland in September 2006 following a positive development recommendation by NIRB. The company has since secured at least $254 million for its gold loan facility, raised approximately $87 million in equity financing to be used for the development of Meadowbank, and obtained $23 million from the sale of its Meliadine East and West interests in October 2006. In November 2006, the Minister of Indian Affairs and Northern Development accepted the NIRB recommendation that the development of Cumberland's Meadowbank gold project should proceed.

Prior to freeze-up, Cumberland staged the necessary equipment and supplies at Baker Lake for the construction of a four-season access road to Meadowbank, pending receipt of the necessary permits. Mining operations from three shallow open pits could commence in late 2008 or early 2009, subject to the receipt of permits and licences.

Meliadine West Project

Comaplex Minerals Corp. is proceeding with an ambitious program to assess the potential development of the Meliadine property (24 km northeast of Rankin Inlet). Total drill meterage completed in the 2006 exploration program was 18 043 m in 75 holes. Of this, 16 124 m (89%) in 62 holes were completed in the Tiriganiaq zone. The remaining 1919 m were drilled in 13 shallow holes on the reconnaissance Aklak and Aqpik targets at the eastern end of the property. The main objective of the 2006 drill program was to confirm continuity of mineralization in the 1000 and 1100 lodes within the Tiriganiaq deposit.

Regional prospecting and sampling to the west of the Tiriganiaq deposit was also completed. Efforts were concentrated on the Musket Bay structure, which hosts the same iron formations and structural deformation as the Tiriganiaq deposit at a location approximately 8 km to the west of Tiriganiaq.

Comaplex is currently in the process of compiling and validating information from its 2006 program to update the amount and classification of the resources in the Tiriganiaq deposit. Preliminary mine planning and cost estimation studies suggest that open-pit mining may be possible to approximately 150 m below surface, and that a small portion of the underground resource may be mined by more selective, narrow-vein mining methods.

From surface to 150 m (potential open-pit operation, applied cut-off grade of 2.5 g/t gold), the calculated indicated resource is 4.2 Mt at 7.5 g/t gold (1 009 000 contained oz) plus an inferred resource of 3.244 Mt at 4.1 g/t gold (432 000 contained oz). Below 150 m (potential underground operation, applied cut-off grade of 6.5 g/t gold), the indicated resource estimate is 0.507 Mt at 11.3 g/t gold (84 000 contained oz) plus inferred resources of 3.188 Mt at 10.9 g/t gold (1 120 000 contained oz). The total ounces of gold are 1 193 000 (indicated) and 1 552 000 (inferred).

Comaplex is presently developing engineering information for the deposit that will lead to the completion of a scoping study by early 2007. Some issues to be included are: costing and associated information related to a proposed exploration decline into the deposit, scheduled for late 2007; upgrading and extension of the existing road between the deposits and the camp, with possible

surface infrastructure work in the area of the proposed portal; and determination of the potential benefits of building a 27-km all-weather road between Rankin Inlet and the deposits site.

KIVALLIQ NICKEL-COPPER-PGE PROJECTS

Ferguson Lake Project

Starfield Resources Inc. acquired this property (160 km south of Baker Lake) in 1999. The property extends 125 km east-west and 71 km north-south at its widest section. The Ferguson Lake deposit is a nickel-copper-PGE deposit hosted by moderate to weakly foliated tholeiitic gabbro-hornblendite layered intrusions.

The focus of the 2006 program was the delineation drilling of the "potential pit area" and selected parts of the 4.2-km-long West zone where previous work has identified 8.7 Mt of indicated resources and an additional 53.2 Mt of inferred resources at a 1% copper plus nickel cut-off grade. Eight kilometres of continuous geophysical conductors have been outlined in the West zone.

Starfield completed 24 000 m of drilling in 2006. Over 5400 one-metre core samples were submitted for analyses and assay. The results will be compiled, integrated with previous drill results, and released with an updated resource estimate during 2007. The geological and resource models being developed will form the basis of an assessment of the Ferguson Lake property. Starfield is currently advancing its hydrometallurgical testing program.

A new all-season base camp and related facilities were built near the West zone. During 2006, the mineral claims hosting the Ferguson Lake sulphide resources, new base camp, and the proposed airstrip were surveyed in preparation for application of a mining lease to cover this part of the property.

KIVALLIQ URANIUM PROJECTS

Baker Basin Project

Pacific Ridge Exploration Ltd. (operator) and partner Kaminak Gold Corporation hold 206 400 ha along the southern edge of the Baker Lake Basin (60 km southeast of Baker Lake). The 2006 program included community consultations, prospecting, sampling, and drilling.

The 694 zone consists of fracture-controlled uranium mineralization in basement gneiss. Six mineralized north-south fracture arrays have been mapped, with grab samples of frost-heaved bedrock assaying up to 16.4% U_3O_8. Drilling confirmed the mineralized fractures continue at depth, but are narrow with variable grade.

Drilling at the historically known KZ zone targeted the depth extension of uranium mineralization associated with silicified and hematite-altered sandstone within and adjacent to a structurally controlled dyke system. Three holes intersected the mineralized structure with uranium grades of 0.56% U_3O_8 over 5.5 m, 0.50% U_3O_8 over 2 m, and 0.27% U_3O_8 over 5.2 m.

Lucky 7 is a new discovery. Uranium mineralization occurring in bleached Kazan sandstone is associated with a northerly trending structure, coincident with a 100- to 200-m-wide by 500-m-long radiometric anomaly. Chip sampling and channel sampling returned values of 0.27% U_3O_8 over 3.9 m and 0.19% U_3O_8 over 3.1 m. Drill core samples returned values of 0.14% U_3O_8 over 1.6 m and 0.32% U_3O_8 over 3.4 m in sandstone.

Kiggavik Project

The Kiggavik project (75 km west of Baker Lake) consists of the Kiggavik and Sissons properties. Areva Resources Canada Inc. is the operator of the project on behalf of partners Dae Woo (Kiggavik and Sissons) and JCU (Canada) Exploration Company Ltd. (Sissons).

A 20-km linear trend (Kiggavik Trend) is the dominant control of uranium mineralization in the area. This trend is a fault-controlled linear trend, striking northeast and gently convex to the northwest, lying between the Thelon and Sissons Lake faults. It hosts seven uranium deposits: Kiggavik (Main, Centre and East), Bong, Andrew Lake, End, and Jane. Resource figures are: Kiggavik zones - 14 872 t of uranium at a grade of 0.38%, representing 39 Mlb of U_3O_8; End deposit - 13 598 t of uranium at a grade of 0.28% for 35 Mlb of U_3O_8 with 1 t of gold and 0.7 t of platinum; and Andrew Lake deposit - 22 160 t of uranium at 0.44% for 57 Mlb of U_3O_8 with 3.1 t of gold and 2.6 t of platinum.

In light of recent trends in the uranium price, Areva has initiated a viability study of this combined project. A community consultation office was opened in Baker Lake in October 2006.

Qikiqtani/Baffin Region

The main target of exploration in the Qikiqtani region is diamondiferous kimberlites. The northwestern half of Baffin Island and the Melville Peninsula have been the focus of diamond exploration for the last few years, with more interest developing in the central and southern portions of Baffin Island, as well as in the Queen Elizabeth Islands.

The largest exploration project focused on iron deposits is in the Mary River area. In central Baffin, iron formations are being explored for their gold potential. Evaluation of sapphire potential continues in the Kimmirut area. There is also interest in coal on Axel Heiberg and Ellesmere islands in the High Arctic, and several companies and individuals have obtained coal exploration licences.

QIKIQTANI/BAFFIN DIAMOND PROJECTS

Aviat Project

The Aviat Joint Venture is a partnership between Stornoway (70%), BHP Billiton (20%), and Hunter Exploration Group (10%) that covers approximately 1.6 Mha of the Melville Peninsula. The property has been Stornoway's main project since 2003 and was the principal focus for 2006.

The Tremblay Corridor is a 70-km by 8-km zone of high indicator mineral concentrations that hosts all the known kimberlites on the property. Eleven kimberlite bodies have been discovered to date: AV1, AV1 West, AV2 Upper, AV2 Lower, AV3, AV4, AV5, AV67, AV8 Upper, AV8 Middle, and AV8 Lower. All bodies have proven significantly diamondiferous with average grades of 0.86 ct/t.

In 2006, Stornoway drilled a total of 1833 m (22 holes) and intercepted kimberlite with true thicknesses up to 5.25 m; these are tentatively interpreted to represent shallowly dipping (8-20°) stacked sheets. Eight distinct kimberlite bodies, with associated zones of kimberlite breccia, were intercepted and intersected in an area measuring 1.5 km by 3.5 km. Additional prospecting identified 122 new kimberlite boulder occurrences and 2100 till samples were collected from 15 unsourced indicator mineral trains with promising chemistry.

Baffin Island Project

Pure Diamonds Exploration Inc. and De Beers Canada Inc. are working on the Baffin Island project (150 km north of Igloolik), part of the High Arctic joint venture between the companies. The Baffin Island project is the most advanced venture and was the focus of exploration for De Beers in this area.

Exploration in 2006 included 4300 line-km of airborne magnetic and electromagnetic surveys, prospecting, geological mapping, ground geophysics, and 1100 m of diamond drilling. The program keyed on the core area of the project where a kimberlite boulder train had been discovered. Diamond drilling resulted in the discovery of a new kimberlite termed "Aliguja." This discovery was at the head of a boulder train defined by detailed prospecting and geological mapping. The Aliguja kimberlite dyke is over 2 km east of, and on trend with, the Amon kimberlite discovered in late 2005. Both kimberlites are located at the south end of a series of boulder trains that, together, form a train over 50 km long. Microdiamond analyses from the Aliguja and Amon trains returned 263 and 234 microdiamonds from samples of 99.3 kg and 136.2 kg, respectively. With an ice flow direction from north to south, the source of the boulder trains is yet undiscovered.

QIKIQTANI/BAFFIN GEMSTONES PROJECTS

Beluga Sapphire Project

Sapphires discovered near Kimmirut, on southern Baffin Island, are hosted in a desilicified syenitic pegmatite lens in marbles of the Lake Harbour Group. The sapphires were discovered in 2001 by independent prospectors Nowdluk and Seemeega Akpiq. In 2003, True North Gems Inc. optioned the occurrence from the Akpiq brothers. The sapphires are natural blue, yellow, or colourless.

In 2004, True North Gems recovered a 4.29-t bulk sample from the Beluga deposit and discovered four additional sapphire occurrences. The results of the bulk sample were encouraging, with the recovery of rough sapphire averaging 790.7 ct/t. The grade of gem-quality and near-gem-quality sapphires was 33.1 ct/t and 115.0 ct/t, respectively. An independent evaluation of a portion of the sapphires that were processed showed an average price of US$570.85/t.

Prospective outcrops, trenches and drill core intervals were identified during 2005 drilling. The 2006 drilling program consisted of 40 holes (1482 m) and concentrated on several high-priority targets hosting visible, colourless to deep blue, pink, and yellow sapphires. Numerous pods exhibiting mineralogical similarities to the main Beluga sapphire occurrence were identified. The intermittent pods ranged in thickness from less than 0.5 m up to 9.5 m, and were intersected from near-surface intervals to depths of more than 35 m. Drilling has also confirmed the widespread presence of several minerals spatially associated with the Beluga sapphire mineralization in each of the Beluga, Muktuk and Bowhead occurrences.

QIKIQTANI/BAFFIN GOLD PROJECTS

Central Baffin (Baffin Island Gold) Project

Commander Resources Inc. is operator of the Central Baffin project (360 km northwest of Pangnirtung) through option agreements with BHP Billiton and Xstrata Plc. The property is underlain by a sequence of Lower Proterozoic sedimentary and volcanic rocks. The Bravo Lake iron formation hosts 15 known gold occurrences, including Ridge Lake, Malrok, Durette, QIM 5, and the newly discovered Brent showing.

The Ridge Lake prospect is 3.5 km long within a prominent east-west structural corridor defined by strong folding, intense local shearing, and alteration. Drill results from 2004 to 2006 indicate that there is a broad low-grade sheet of gold mineralization across a central zone that contains several higher-grade shoots plunging southwest. Recent drilling highlights include a hole that returned 15.13 g/t gold over 1.67 m and a step-out hole drilled 150 m southwest of the first hole that returned 2.02 g/t gold over 2.09 m.

The Malrok prospect, located 30 km west of Ridge Lake, occurs over a strike length of approximately 2 km. Surface samples returned gold values of up to 212 g/t and drilling results down to a

depth of 50 m included 9.15 g/t gold over 6.0 m, 15.12 g/t gold over 3.0 m, and 12.1 g/t gold over 3.3 m. The iron formation-hosted gold mineralization extends down-dip from surface for at least 130 m.

The Durette prospect is outlined over an area of at least 2 km. The best channel samples are 28.9 g/t gold over 2 m and 18.0 g/t gold over 2 m, with two chip samples at the Durette showing returning values of 41.4 g/t gold and 46.95 g/t gold. Drilling at the Durette showing intersected 9.61 g/t gold over 1.56 m at a depth of 14.30 m. This trend is open and continues to the west. At Qim 5, 20 km east of Ridge Lake, a grab sample containing 48.29 g/t gold was found 150 m southeast of a 2004 100-g/t gold channel sample. The Brent showing was discovered in 2006, 5 km southwest of Ridge Lake. It is a 1400-m-long shear zone with quartz veining, arsenopyrite, and pyrrhotite. Analytical results from 66 grab samples along the length of the shear zone range up to 113.95 g/t gold. Two drill holes tested the Brent showing and gold mineralization up to 6.14 g/t gold over 1 m was intersected at a 45-m vertical depth beneath surface exposures that carried high-grade gold.

QIKIQTANI/BAFFIN IRON PROJECTS

Mary River Iron Ore Project

The iron deposits at Mary River on north-central Baffin Island (160 km south of Pond Inlet) were first discovered in 1962. Between 1963 and 1965, five high-grade iron deposits were identified. Other work at that time included the construction of gravel airstrips and a haul road between Mary River and Milne Inlet, and topographic and hydrographic surveys conducted off Milne Inlet by the Government of Canada. However, a full feasibility study performed at that time concluded the deposit was uneconomic.

Baffinland Iron Mines Corporation re-initiated work on the property in 2004. Drilling in 2005 tested the feasibility of a 10-Mt/y operation for at least 35 years. In 2006, Baffinland completed 7067 m of diamond drilling, including geotechnical drilling and in-fill drilling on Deposit No. 1, step-out drilling on Deposit No. 2, and first-time drilling on Deposit No. 3. The geotechnical drilling for Deposit No.1 tested foundation conditions for infrastructure and provided data to assist in pit slope optimization.

Deposit No. 3 is located 700 m south of Deposit No. 2 and 3.5 km east of Deposit No. 1. Drilling of Deposit No. 2 and Deposit No. 3 was designed to provide data for a scoping study to assess the potential of these deposits; this study is being prepared in conjunction with the feasibility study. The scoping study will investigate the implications of subsequent expansion of these satellite deposits using much of the infrastructure established for the development of Deposit No. 1. The highlight of the 2006 drilling program was a continuous core interval of 169.8 m (true thickness of approximately 140 m) of massive specular hematite in Deposit No. 3.

Aker Kvaerner Canada Inc. completed a scoping study in 2006 for Deposit No. 1, which provided cost estimates and an economic analysis for a 10-Mt/y production rate. A feasibility study is currently being prepared by the same consultants and this study is scheduled for completion in late 2007. Successful exploration to date has encouraged Baffinland to consider an expanded production rate of 12.5-15 Mt/y.

In 2006, Baffinland also collected significant data, including metallurgical testing, resource modeling, land and marine transportation studies, potential port assessments, environmental baseline collection, socioeconomic assessments, traditional knowledge studies, renewable energy studies, and iron ore market reconnaissance. Baffinland commenced negotiations on an Inuit Impact and Benefit Agreement (IIBA) with the Qikiqtani Inuit Association.

3. Canadian Exploration Activity Around the World

3.1 INTRODUCTION

This section provides an overview of Canadian mineral exploration activity[27] abroad. It also highlights the domestic and foreign components of the larger-company exploration market in Canada. The information in this review[28] was current as at September 2006.

3.2 GLOBAL MARKET FOR MINERAL EXPLORATION

The year 2005, much like the previous one, was very favourable for the financing of mining companies on international markets. By the end of December, almost $12 billion of the more than $22 billion in equity that companies expected to add to their working capital had already been obtained.[29] More than 40% of the funds in hand at year-end were on account of companies listed on Canadian stock exchanges.

The value of exploration programs expected to be undertaken worldwide in 2005 for precious metals, base metals and diamonds (**Table 18**) rose to almost $6.3 billion (US$5.1 billion), up in constant Canadian dollars by $1.1 billion, or 22%, from the $5.2 billion that companies had planned to spend in 2004.[30] The value of these programs includes the budgets of the larger companies and those of the smaller companies. It also includes estimates for firms that do not disclose their exploration plans and for firms that were likely to spend less than $123 000 (US$100 000) in 2005.

The world's larger companies are defined, in this paper, as those companies that planned to spend at least $3.7 million (current US$3 million) on mineral exploration in 2005; the world's smaller companies are defined as those companies that planned to spend at least $123 000 (US$100 000), but less than $3.7 million, on mineral exploration in 2005.

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[27] Most of the statistical data on the larger-company mineral exploration market are based on *Corporate Exploration Strategies: A Worldwide Analysis*, published annually by Metals Economics Group, Halifax, Nova Scotia. MEG counts, as exploration, work from the earliest stage through perimeter drilling, reconnaissance and evaluative forays, as well as work to further quantify and define an identified orebody once the target outline stage has been completed. It also counts as exploration all feasibility work up to the point of a production decision. The information on specific projects is based on company reports.

[28] Chapter 3 of this report is a summary of an article from the 2005 *Canadian Minerals Yearbook* published by Natural Resources Canada (available on the Internet at www.nrcan.gc.ca/mms/cmy).

[29] *Mining and Exploration Companies (MECO) Financings: Monthly Records and Historic Trends, December 2005*, Gamah International Limited, Toronto, Ontario, circa. January 2006, Section II, pp. 2.1-2.70.

[30] Unless indicated otherwise, all currencies in this review are expressed in Canadian dollars and currency comparisons between years are expressed in constant Canadian dollars.

TABLE 18. WORLDWIDE EXPLORATION BUDGETS FOR PRECIOUS METALS, BASE METALS OR DIAMONDS, BY TYPE OF COMPANY AND BY DOMICILE OF COMPANY, 2005

	Canada	Australia	Africa-Middle East	Europe-FSU	United States	Latin America	Other Asia-Pacific	Unspecified Domicile	Total	Proportion of Subtotal
					($ millions)					(%)
Larger companies	1 933	570	628	727	442	416	75	–	4 791	79
Smaller companies	757	324	12	71	60	15	14	–	1 253	21
Subtotal	2 690	894	640	798	502	431	89	–	6 044	100
Other	..	..	..	..	..	..	..	247	247	
Total	..	..	..	..	..	..	..	247	6 291	

Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
– Nil; . . Not available.
Notes: (1) "Larger companies" are defined here as those with budgets for mineral exploration in 2005 of $3.7 million (US$3 million) or more. There were 304 such companies in 2005. These companies usually account for roughly 80% of documented annual global exploration budgets. There are 14 years of data available for these companies. The focus of this paper is on the larger companies. (2) "Smaller companies" are defined here as those with budgets for mineral exploration in 2005 of at least $123 000 (US$100 000), but less than $3.7 million (US$3 million). There were 1127 such companies in 2005. General comments about these companies as a group appear in this paper. (3) "Other" includes estimates for companies with budgets for mineral exploration in 2005 of less than $123 000 (US$100 000) and estimates for companies that undertake significant exploration programs, but that did not disclose their budgets for 2005. There were at least 125 such companies in 2005. These companies are ignored in this paper.

The number of companies that reported budgets for mineral exploration of at least $123 000 in 2005 rose to 1431, up by 293 firms, or 26%, from 1138 the previous year. As a group, these 1431 companies planned to spend $6.0 billion in 103 countries, 4 more than in 2004. Almost 890 of these companies, or 62%, were based in Canada.

Compared with the previous year, the budgets of companies that planned to spend at least $123 000 on mineral exploration in 2005 increased for about 70% of the countries in which they expected to operate. Aggregate year-over-year company budgets grew by $190 million for Canada, by $120 million for Argentina, by $110 million for Russia, by $100 million for the United States, by $75 million for Mexico, and by roughly $50 million for each of Angola, Chile, and the Democratic Republic of the Congo. As for the 34 countries where decreases in exploration budgets were expected to occur from 2004 to 2005, the largest decrease was less than $10 million.

3.3 WORLD'S LARGER COMPANIES

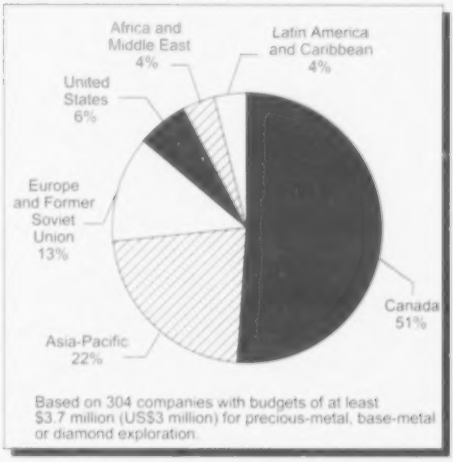
Global trends in mineral exploration are based on data for the world's larger companies. The larger companies are the only ones for which there are multi-year data on worldwide exploration plans. There are currently 14 years of such data available. Therefore, the focus of this paper is on this group of companies.

During 2005, the world's larger companies were expected to undertake exploration programs with a combined value of $4.8 billion (US$3.9 billion) in 79 countries, 5 more than in 2004. The aggregate budgets of the world's larger companies increased by 26%, up from $3.8 billion the previous year.

In 2005, the number of companies based around the world that intended to spend at least $3.7 million on mineral exploration rose to 304 (**Figure 41**), a record high. In 2004, 213 had planned to spend an equivalent amount.

Although, in 2005, the world's 304 larger companies represented only 21% of the 1431 companies that

Figure 41
Distribution of the World's Larger Exploration Companies, by Domicile, 2005


Africa and Middle East 4%
Latin America and Caribbean 4%
United States 6%
Europe and Former Soviet Union 13%
Canada 51%
Asia-Pacific 22%
Based on 304 companies with budgets of at least $3.7 million (US$3 million) for precious-metal, base-metal or diamond exploration.

Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.

reported exploration budgets of at least $123 000, they accounted for 79% of the value of their programs (**Table 18**). On a commodity basis, the larger companies accounted for 87% of the value of worldwide programs aimed at diamonds, for 82% of those aimed at base metals, for 77% of those aimed at platinum group metals (PGM), and for 76% of those aimed at gold.

On a regional basis, the world's larger companies accounted for 88% of the value of the exploration programs planned for Europe and the former Soviet Union (FSU), for 87% of those planned for Africa and the Middle East, for 86% of those planned for Latin America and the Caribbean, for 79% of those planned for the United States, for 73% of those planned for Asia-Pacific, and for 67% of those planned for Canada.

3.4 WORLD'S SMALLER COMPANIES

During 2005, the world's smaller companies were expected to undertake exploration programs around the world with a combined value of $1.3 billion (US$1.0 billion). About 30% of the budgets of these companies was expected to be spent in Canada. In 2005, 1127 companies were classified as smaller companies, up from 925 in 2004. Almost 65% of these companies were based in Canada.

The smaller companies are significant contributors to mineral exploration and development in many regions of the world. In many countries, the smaller companies are the only ones that undertake commercial mineral exploration. In 2005, there were 24 countries where the only firms planning to be active in mineral exploration were smaller companies.

The smaller companies are a significant component of the exploration activity occurring in Australia and in Canada. In 2005, the smaller Canadian-based companies accounted for 28% of the budgets of the smaller and larger Canadian-based companies combined; in Australia the comparable figure was 36%.

The smaller Canadian companies planned to spend $370 million in Canada, or 49% of their worldwide budgets of $757 million; in Australia, the comparable figures were $235 million, or 73% of worldwide budgets of $324 million.

Although the world's smaller companies accounted for 21% (**Table 18**) of the value of all exploration programs expected to be undertaken worldwide during 2005, their activities are not addressed specifically here.

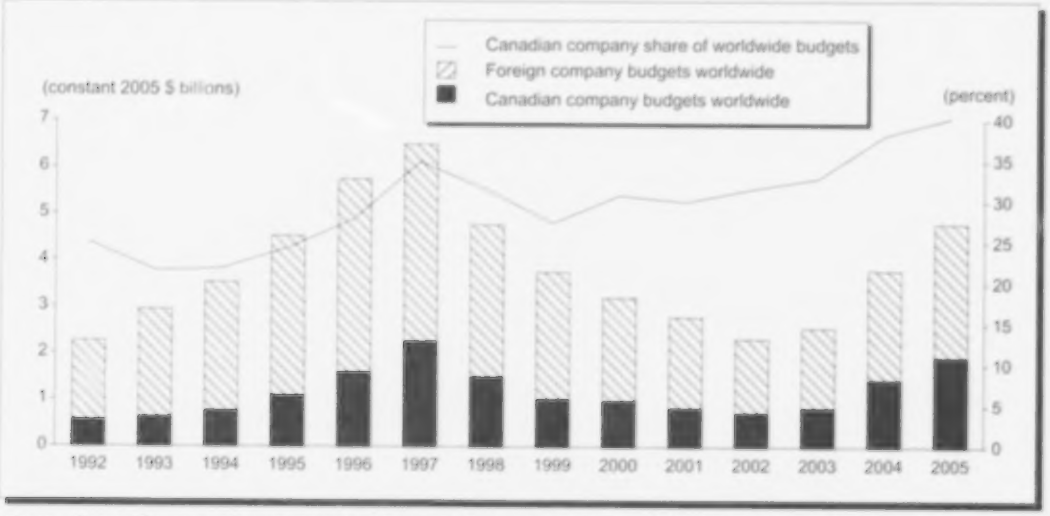
3.5 LARGER CANADIAN-BASED COMPANIES

There are more mining companies based in Canada than anywhere else. In 2005, 155 of the world's 304 larger companies were based in this country (**Figure 41**). The previous year, 105 of the 213 larger companies were based in Canada.

In 2005, the value of the exploration programs that the larger Canadian-based companies planned to undertake in Canada and elsewhere around the world increased to more than $1.9 billion (**Figure 42**), up by $480 million, or 33%, from the $1.4 billion that they budgeted in 2004.

The larger Canadian-based companies allocated 54% of their budgets to explore for gold, 31% to explore for base metals, 8% to explore for diamonds, and 2% to explore for PGM. The proportion of their budgets allocated to gold was somewhat less than in 2004, while the proportion allocated to diamonds and to PGM was somewhat more. In comparison, the average world proportions allocated to gold, base metals, diamonds and PGM in 2005 stood at 46%, 31%, 14%, and 4%, respectively.

Figure 42
Exploration Budgets of the World's Larger Companies, by Domicile, 1992-2005
Companies With Worldwide Budgets of at Least $3.7 Million in 2005 for Precious-Metal, Base-Metal or Diamond Exploration



Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
Notes: The worldwide exploration budgets of companies that intended to spend less than $3.7 million (US$3 million) in 2005 and an equivalent amount in previous years are excluded. The worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

The value of the programs that the larger Canadian-based companies planned to undertake during 2005 grew to 40% of the value of all larger-company exploration programs for the entire world, compared with 38% in 2004. However, adding the value of the programs of the smaller Canadian-based companies to those of the larger ones raises the proportion of the value of exploration programs planned by Canadian-based companies here and abroad to almost 45% of all of the activity expected worldwide.

Canadian companies account for the dominant share, by far, of the value of all mineral exploration programs planned worldwide by the larger companies. In contrast, in 2005, the larger companies based in Africa accounted for 13%, those based in Europe accounted for 15%, those based in Australia accounted for 12%, and those based in the United States accounted for 9%.

The larger Canadian-based companies typically budget less individually for exploration programs than the industry average worldwide. In 2005, the aggregate exploration budgets of the larger Canadian-based companies had a mean of $12.5 million and a median of $7.0 million. This compared with global averages of $15.8 million and $7.4 million, respectively. The largest Canadian mineral exploration budget in 2005 was $148 million, while the world's largest was $251 million.

Although for companies of different sizes and for companies based in different regions of the world there can be significant variations between exploration budgets and exploration expenditures, aggregate budgets generally provide a reliable estimate of the total amount that is likely to be spent in the field.

For 2004, 1011 companies based around the world provided data for both their exploration expenditures and for their exploration budgets. Of these 1011 companies, 184 were classified as larger companies and 827 as smaller companies. In total, these 1011 companies had planned to spend $4,549 billion on exploration during 2004. However, by the end of the year, they had actually spent

$4.895 billion, an increase of $346 million, or almost 8%. These 184 larger companies spent $142 million more than they had initially planned, or an increase of about 4%. The 827 smaller companies spent $204 million more than they had initially planned, an increase of almost 20%. In comparison, 92 larger Canadian-based companies exceeded their aggregate budgets of $1.335 billion by only $17 million, or by roughly 1%, while 508 smaller Canadian-based companies exceeded their aggegate budgets of $609 million by $143 million, or by more than 23%. In 2004, the departure of expenditures from the budgets of individual companies ranged between $20 million under budget and $39 million over budget for the larger companies, and between $3 million under budget and more than $28 million over budget for the smaller ones. For most of the larger companies, expenditures that year were within plus or minus $5 million of the amount budgeted, while for most of the smaller companies they were within plus or minus $1 million. In comparison, in 2003, the larger Canadian-based companies exceeded their exploration budgets by about 14%.[31] In each of 1997 and 1998, these companies under-spent their budgets by roughly 8% and 7%, respectively.[32]

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in a portfolio of more than 7900 mineral properties (**Figure 43**) located in Canada or in more than

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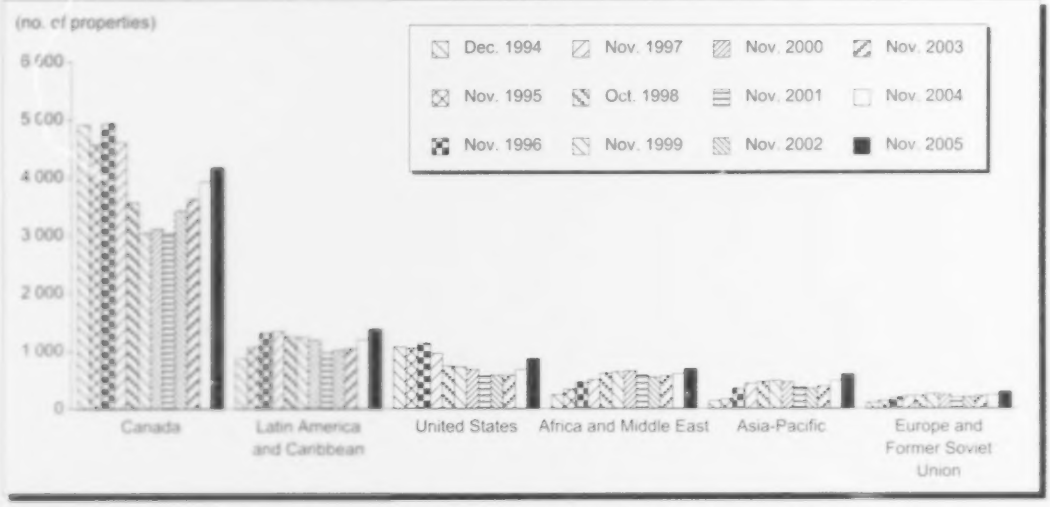
[31] André Lemieux, "Canada's Global Mining Presence," in the 2004 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.3 and 7.4 (www.nrcan.gc.ca/mms/cmy/content/2004/08.pdf).

[32] André Lemieux, "Canada's Global Mining Presence," in the 1998 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.1 and 7.2 (www.nrcan.gc.ca/mms/cmy/content/1998/08.pdf). See also André Lemieux, "Canada's Global Mining Presence," in the 1999 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.1 and 7.3 (www.nrcan.gc.ca/mms/cmy/content/1999/08.pdf).

Figure 43
Canadian Mineral Property Portfolio Worldwide, by Region, 1994-2005
Companies of All Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on *MIN-MET CANADA* for 1994-97 and InfoMine db for 1998-2005, Robertson Info-Data Inc., Vancouver, British Columbia, and used under licence.
Note: The decrease in properties in Canada after 1997 is due, in part, to the implementation of database features that make it possible to exclude many inactive properties.

100 other countries around the world.[33] Most of this portfolio consists of properties at the early stages of exploration. The number of properties in which these companies held interests worldwide at the end of 2005 increased by more than 800, or by 11%, compared with the number that they held at the end of the previous year. More than 70% of the increase in the portfolio of mineral property interests occurred abroad.

3.6 LARGER-COMPANY EXPLORATION MARKET IN CANADA

In 2005, the larger-company mineral exploration market in Canada was valued at $769 million (**Figure 44**), up by over $130 million, or 21%, from roughly $637 million in 2004. For the fourth year in a row, Canada, in 2005, remained the country where the global mineral exploration industry expected to be the most active. Australia held that position from 1992 through 2001.

In 2005, 91 of the world's larger domestic-based or foreign-based companies planned to explore for minerals in Canada, up from 69 such companies in 2004. During 2005, more than 16% of the exploration efforts of the world's larger companies were expected to take place in Canada, compared with 17% in 2004 (**Figure 45**). However, including the exploration programs of the smaller companies with those of the larger ones raises the proportion of the world's total exploration activity planned for Canada in 2005 to 19%, slightly less than in 2004.

At the end of 2005, there were more than 4150 mineral properties with recent exploration activity in this country[34] (**Figure 43**), about 230 more properties than at the end of 2004.

3.6.1 Larger Canadian-Based Companies in Canada

In 2005, 79 of the larger Canadian-based companies allocated, in total, more than $640 million for mineral exploration in Canada (**Figure 44**). Their budgets were up by $143 million, or 29%, from the $497 million that they allocated in 2004. For the sixth year in a row, Canadian companies planned to spend more on mineral exploration in Canada than they planned to spend in all of the Latin American countries combined.

With increasing globalization, the share of the domestic exploration market controlled by Canadian-based companies generally fell annually as foreign-based companies increased the amount of activity that they undertook in this country. However, in 2005, as in the previous year, the share of the larger-company mineral exploration market controlled by the larger Canadian-based companies grew. It reached over 83% in 2005, up from 78% in 2004. In 2005, the share of the larger-company mineral exploration market controlled by Canadian-based companies stood at its highest since 1992. Elsewhere, since the early 1990s, the share of the domestic exploration market controlled by the larger local firms has tended to decrease each year, particularly in the United States and in Australia.

Because mineral exploration is such an international enterprise, the dominance of exploration programs by domestic firms is relatively uncommon. In 2005, there were only six countries, other than

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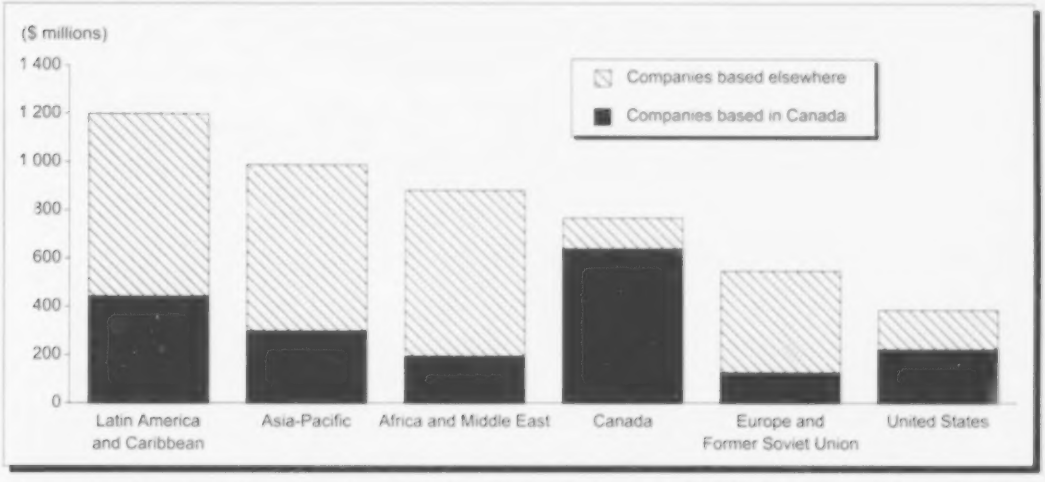
[33] Most of the data for 1991 through 1997 on the mineral property portfolio of companies of all sizes listed on Canadian stock exchanges are derived from MIN-MET CANADA; for 1998 through 2005, the data are derived from InfoMine db. These databases are products of Robertson Info-Data Inc. of Vancouver, British Columbia.

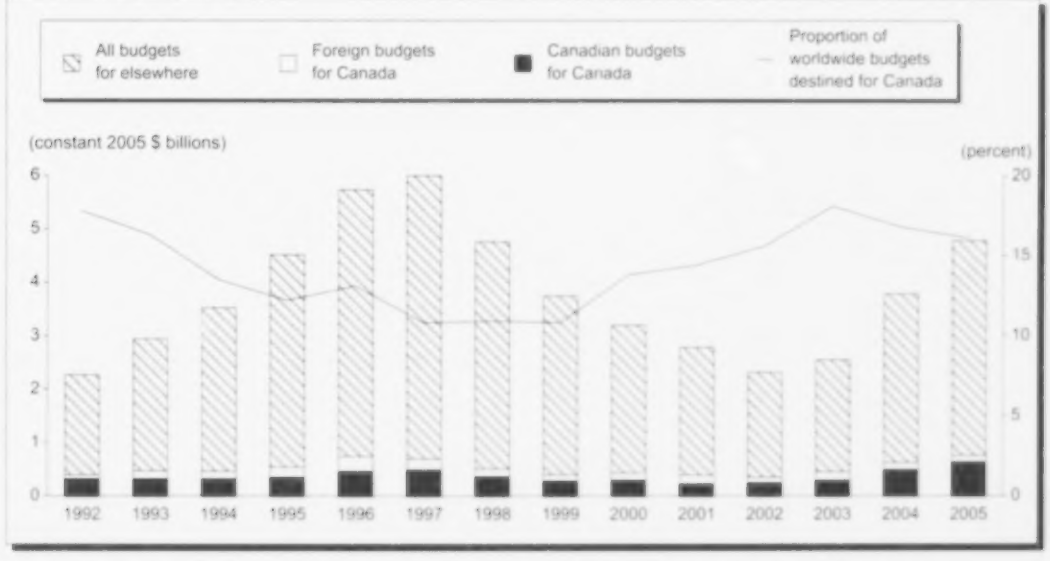
[34] For trends in mineral deposit appraisal activity in Canada over the interval 1982-97, and for a list of projects at the deposit appraisal stage in the late 1990s, see André Lemieux, "Canada's Global Mining Presence," in the 1996 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 8.9 and 8.11-8.22 (www.nrcan.gc.ca/mms/cmy/content/1996/08.pdf).

Figure 44
Exploration Budgets of the World's Larger Companies for Selected Regions of the World, 2005
Companies With Worldwide Budgets of at Least $3.7 Million for Precious-Metal, Base-Metal or Diamond Exploration



Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
Notes: The worldwide exploration budgets of companies that intended to spend less than $3.7 million (US$3 million) in 2005 are excluded. The worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

Figure 45
Exploration Budgets of the World's Larger Companies for Canada and Elsewhere, 1992-2005
Companies With Worldwide Budgets of at Least $3.7 Million in 2005 for Precious-Metal, Base-Metal or Diamond Exploration



Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
Notes: The worldwide exploration budgets of companies that intended to spend less than $3.7 million (US$3 million) in 2005 and an equivalent amount in previous years are excluded. The worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

Canada, where domestic companies accounted for more than half of the value of the larger-company market for mineral exploration: Russia (50%), Australia (57%), Sweden (62%), South Africa (67%), and Poland and Uruguay, each with 100%. Although, during 2005, the larger-company mineral exploration market was valued at $512 million in Australia, $224 million in South Africa, and $311 million in Russia, it was valued at only $36 million in Sweden, $6 million in Poland, and less than $4 million in Uruguay.

In 2005, the larger Canadian-based companies allocated one third of their global exploration budgets to programs in Canada, about the same as in the previous year. In 1992, that proportion was 57%. In comparison, in 2005, the larger Australian-based companies allocated 51% of their global budgets to domestic exploration, while American companies allocated 25%.

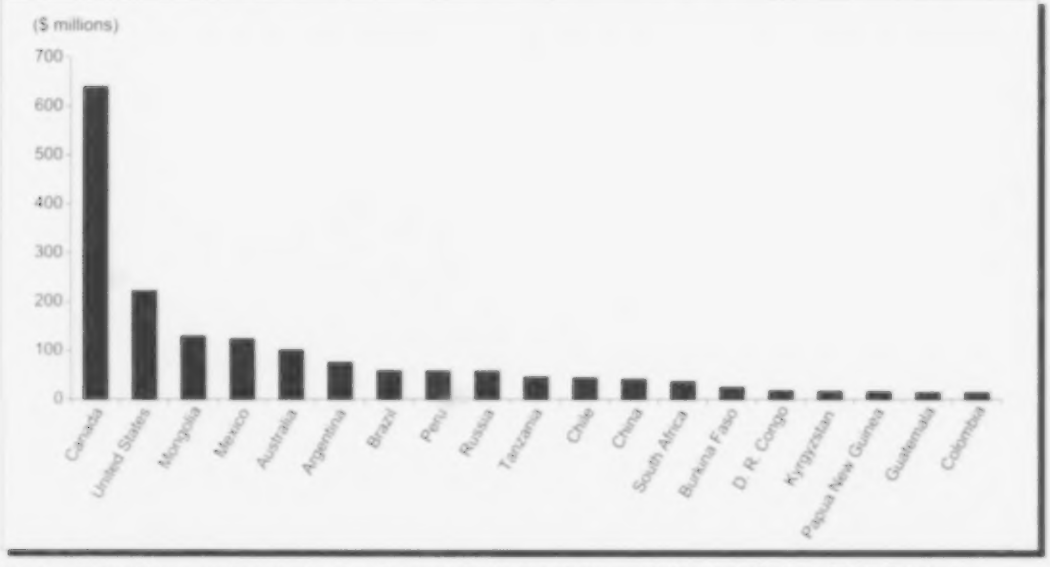
Although Canadian companies operate all over the world, Canada remains the country where they conduct the largest proportion, by far, of their global mineral exploration programs (**Figure 46**).

3.6.2 Foreign-Based Companies in Canada

During 2005, 12 of the larger foreign-based companies planned to spend, in total, almost $129 million on mineral exploration in Canada (**Figure 44**), compared with $141 million in 2004. In 2005, foreign-based companies were expected to undertake 17% of all larger-company exploration programs planned for this country. Almost 70% of foreign exploration budgets for Canada were aimed at diamonds.

The larger foreign-based companies active in mineral exploration in Canada in 2005 included the BHP-Billiton group based in Australia; Phelps Dodge Corporation, Meridian Gold Inc., and

Figure 46
Exploration Budgets of the Larger Canadian-Based Companies, 2005 – Countries Accounting for 90% of Canadian Budgets
Companies With Worldwide Budgets of at Least $3.7 Million for Precious-Metal, Base-Metal or Diamond Exploration



Source: Natural Resources Canada, based on *Corporate Exploration Strategies: A Worldwide Analysis*, Metals Economics Group, Halifax, Nova Scotia.
Notes: The worldwide exploration budgets of companies that intended to spend less than $3.7 million (US$3 million) in 2005 are excluded. The worldwide exploration budgets for other commodities such as uranium or industrial minerals are also excluded.

Newmont Mining Corporation, all based in the United States; the Anglo American group, Lonmin Plc, Rambler Metals and Mining plc, and the Rio Tinto group, all based in the United Kingdom; and Anglo American Platinum Corporation Limited, the De Beers group, and Gold Fields Limited, all based in South Africa.

In 2005, BHP-Billiton planned to spend roughly $43 million on mineral exploration in Canada. The budget of BHP-Billiton was the largest reported for this country for that year. More than 90% of that budget was directed to diamonds.

3.7 LARGER CANADIAN-BASED COMPANIES ABROAD

In 2005, the larger Canadian-based companies planned to spend almost $1.3 billion on mineral exploration outside of Canada (**Figure 44**). Their foreign budgets were up by more than $340 million, or 36%, from the $950 million that they planned to spend in 2004.

Roughly two-thirds of the worldwide budgets of the larger Canadian-based companies were allocated to programs abroad in 2005, about the same proportion as in each of the previous three years. The foreign programs of the larger Canadian-based companies, as a proportion of their domestic and foreign programs combined, peaked at over 78% in 1997. In 1992, that proportion was only 43%.

Almost 70% of the 155 larger Canadian-based companies planned to work abroad during 2005. Of these 155 companies, 76 (49%) planned to work only abroad while 32 (21%) planned to work in both Canada and abroad. Only 47 (30%) of the 155 larger Canadian-based companies planned to work only in this country.

Although mining is a global enterprise, undertaking exploration programs in several countries simultaneously is relatively uncommon. In 2005, only 15 (10%) of the 155 larger Canadian-based companies budgeted for programs in five or more countries, 31 (20%) budgeted for programs in two countries, and 94 (61%) budgeted for programs in only one country.

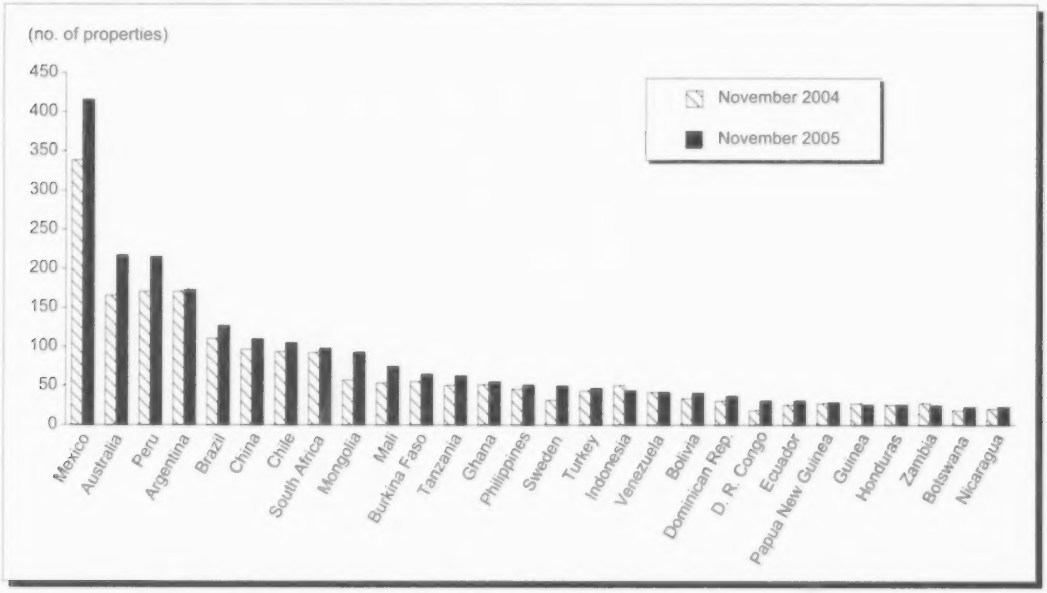
Smaller companies are less likely to undertake foreign operations than the larger ones. In 2005, only slightly more than half of the 730 smaller Canadian-based companies budgeted for work abroad. Of these 730 companies, 277 (38%) planned to work only abroad, 99 (14%) planned to work in both Canada and abroad, and 354 (48%) planned to work only in Canada.

Of the 730 smaller Canadian-based companies, only 1 planned to work in five or more countries, 130 (18%) planned to work in two countries, and 571 (78%) of them planned to work in a single country.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in a portfolio of almost 3770 mineral properties located abroad (**Figure 43**), up by over 570 properties compared with the number held at the end of the previous year.

Foreign properties represent almost 48% of the total mineral property portfolio held by companies of all sizes listed on Canadian stock exchanges. In 1992, that proportion was only one quarter. Apart from the United States, where companies of all sizes listed on Canadian stock exchanges have a substantial mining presence, about 30 other nations, spread across the globe, account for much of the balance of their foreign mineral property portfolio (**Figure 47**).

Figure 47
Canadian Mineral Property Portfolio Abroad, 2004 and 2005 – Countries Accounting for 80% of Canadian Holdings Located Outside the United States in 2005
Companies of All Sizes Listed on Canadian Stock Exchanges



Source: Natural Resources Canada, based on InfoMine db, Robertson Info-Data Inc., Vancouver, British Columbia, and used under licence.

In mid-2000, Canadian companies had interests in over 200 mines, smelters, refineries, plants under construction, or other advanced mineral development projects in roughly 60 foreign countries.[35] Canadian companies also held interests in hundreds of other projects at the early stages of exploration in these countries and in more than 40 others.

At the end of 2005, there was at least US$97 billion worth of new copper, diamond, gold, iron, nickel, PGM, silver, uranium or zinc-lead mining projects, each with a value of at least US$75 million, either at the planning, feasibility, construction, or deferred stage of development in Canada or elsewhere around the world.[36] Although, at that time, only about 5% of the total value of those projects was expected to be invested in this country, Canadian companies were expected to participate in roughly 25% of all mining investment planned for Canada and the other regions of the globe. In comparison, at the end of 2002, Canadian companies were expected to participate in 27% of the US$54 billion in new mining projects planned.[37]

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35 For a list of mines, smelters, refineries and other advanced mineral development projects in which companies based in Canada had an interest in mid-2001, see André Lemieux, "Canada's Global Mining Presence," in the 2000 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.16-7.19 (www.nrcan.gc.ca/mms/cmy/content/2000/08.pdf).

36 Magnus Ericsson and Anja Olsson, "Project Investment Survey 2006," *Engineering & Mining Journal*, January-February 2006, pp. 55-59.

37 André Lemieux, "Canada's Global Mining Presence," in the 2002 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.6-7.8 (www.nrcan.gc.ca/mms/cmy/content/2002/08.pdf).

The activities of Canadian mining companies in Canada and abroad have fostered the development, in this country, of over 2200 suppliers of specialized mining goods and services. Many of these suppliers, such as some drilling companies, export their products all over the world.[38]

3.7.1 United States

In 2005, the larger-company mineral exploration market in the United States was valued at $387 million (**Figure 44**), or roughly 8% of the $4.8 billion larger-company market worldwide. Larger-company budgets for the United States were up by $68 million, or by more than 21%, compared with those of the previous year. Twenty-five of the larger Canadian-based companies planned to spend, in total, almost $223 million in the United States, up from $141 million in 2004.

The share of the larger-company mineral exploration market held by Canadian-based companies in the United States in 2005 stood at almost 58%, up from 44% the previous year. The United States ranks second, after Canada, in terms of countries where Canadian companies are the most active in mineral exploration (**Figure 46**).

During 2005, Canadian companies planned to spend more than twice as much as American firms on mineral exploration in the United States. The budgets of domestic companies for the United States have generally been falling annually from a high of over $300 million in 1992. Although American companies accounted for almost 60% of the value of exploration programs in their country in 1992, their activities represented only 28% in 2005. Since 1999, American companies have allocated less than 30% of their worldwide budgets annually to domestic exploration.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in 855 mineral properties in the United States (**Figure 43**), roughly 175 more than at the end of the previous year. In 2000, companies of all sizes listed on Canadian stock exchanges had interests in properties located in 22 states, but their holdings were concentrated mainly in the western part of the country in Nevada, Alaska, California, Arizona, Montana, Idaho, Wyoming, Colorado, Washington, Utah, and South Dakota in decreasing order.[39] That year, Nevada alone accounted for more than 250 of their interests in mineral properties, or for almost 40% of the total Canadian portfolio in the United States.

Although Canadian companies have expanded considerably their activities in Latin America, Africa and Asia since the early 1990s, the United States is likely to remain, for the foreseeable future, the foreign country where they hold their largest portfolio of mineral properties. At the end of 2005, the United States accounted for almost 23% of all interests in properties held abroad by companies of all sizes listed on Canadian stock exchanges.

3.7.2 Latin America and the Caribbean

In 2005, the larger-company mineral exploration market in Latin America and the Caribbean was valued at $1.2 billion (**Figure 44**), or 25% of the $4.8 billion larger-company market worldwide.

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[38] For a discussion of the global market for mining goods and services, and the role played by Canadian companies, see André Lemieux, *Canadian Suppliers of Mining Goods and Services: Links Between Canadian Mining Companies and Selected Sectors of the Canadian Economy*, Natural Resources Canada, Ottawa, September 2000, 84 pp. (www.nrcan.gc.ca/mms/pdf/minegs_e.pdf).

[39] For the geographic distribution, by state, of mineral properties in which Canadian companies have an interest in the United States, see André Lemieux, "Canada's Global Mining Presence," in the 2000 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.5-7.7 (www.nrcan.gc.ca/mms/cmy/content/2000/08.pdf).

From 2004 to 2005, Latin America and the Caribbean experienced the largest absolute growth in mineral exploration budgets of any region. The larger-company mineral exploration market in the region grew by $315 million, or 36%. The larger Canadian-based companies planned to spend $444 million there, up by more than $130 million, or by over 40%, from $313 million in 2004.

After Canada, Latin America and the Caribbean is the region of the world where Canadian companies are currently the most active in mineral exploration (**Figure 44**). However, from 1995 to 1999, Canadian companies spent more on mineral exploration in Latin America and the Caribbean than they did in this country. Over the 12-year period 1991-2002, the global mining industry invested more than US$7.2 billion (current dollars) in mineral exploration in Latin America and the Caribbean. Companies listed on Canadian stock exchanges made one third of that investment.[40]

In 2005, Canadian companies held 37% of the larger-company mineral exploration market in Latin America and the Caribbean, up somewhat from 35% the previous year. The Canadian share is the largest, by far, of all international competitors in the region and amounts to roughly $90 million more than domestic companies planned to spend there. The share of the exploration market held by local companies in the region stood at 29% in 2005. In contrast, in 1994, local companies held less than 14% of the market. However, their share has generally risen most years since then.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in almost 1370 mineral properties in Latin America and the Caribbean, about 170 more than in 2004. Since 1996, the number of mineral property interests held by Canadian companies in the region has exceeded the number held in the United States (**Figure 43**).

3.7.2.1 Mexico

In 2005, the larger-company mineral exploration market in Mexico was valued at $228 million, or roughly 5% of the $4.8 billion larger-company market worldwide. Larger-company budgets for Mexico increased by almost $80 million, or by over 50%, compared with those of the previous year.

In 2005, Mexico ranked first in Latin America, and fourth in the world, in terms of countries where Canadian companies are the most active in mineral exploration (**Figure 46**). Twenty-five of the larger Canadian-based companies planned exploration programs for Mexico during 2005. These companies planned to spend, in total, $124 million, which represents 55% of the larger-company market in that country.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in about 420 mineral properties in Mexico, almost 80 more than at the end of 2004.[41]

3.7.2.2 South America

In 2005, the larger-company mineral exploration market in South America was valued at $920 million, or more than 19% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the larger-company mineral exploration market in the region grew by $250 million, or by 37%.

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[40] André Lemieux, *Attracting International Mineral Exploration: The Competitive Position of Peru*, unpublished paper, Natural Resources Canada, Ottawa, March 2002, 37 pp.

[41] For the geographic distribution, by state, of mineral properties in which Canadian companies have an interest in Mexico, see André Lemieux, "Canada's Global Mining Presence," in the 2000 edition of the *Canadian Minerals Yearbook*, Natural Resources Canada, Ottawa, pp. 7.7 and 7.8 (www.nrcan.gc.ca/mms/cmy/content/2000/08.pdf).

Forty-one of the larger Canadian-based companies planned to spend, in total, $294 million in South America, almost $80 million more than during the previous year. Their programs accounted for 32% of all larger-company mineral exploration activity planned there, roughly the same proportion as the programs planned by local companies.

Canadian companies held the dominant share of the larger-company mineral exploration market in Argentina, Bolivia, Colombia, Ecuador, French Guiana, Guyana, and Suriname. Argentina, Brazil, Peru and Chile rank sixth, seventh, eight and eleventh, respectively, in the world in terms of countries where Canadian companies are the most active in mineral exploration (**Figure 46**).

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in 800 mineral properties throughout South America, almost 90 more than at the end of the previous year. They held interests in 215 properties in Peru, in over 170 in Argentina, in almost 130 in Brazil, in more than 100 in Chile, in more than 40 in each of Bolivia and Venezuela, and in more than 30 in Ecuador. From 2004 to 2005, the number of mineral properties in which Canadian companies held interests in Peru grew by 45, the largest year-over-year gain for Canadian companies in the region.

3.7.2.3 Central America

In 2005, the larger-company mineral exploration market in Central America was valued at $42 million, or roughly 1% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the larger-company mineral exploration market grew by $14 million, or by 54%. The larger Canadian-based companies planned to spend $24 million in the region.

Central America is one of the regions of the world where the smaller companies, and those based in Canada in particular, account for a substantial proportion of the mineral exploration activity that usually takes place there. In 2005, the smaller Canadian-based companies were expected to account for all of the $11 million smaller-company exploration market in that region.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in roughly 100 mineral properties throughout Central America, about the same number as at the end of the previous year. They held interests in more than 25 in Honduras, in more than 20 in each of Guatemala and Nicaragua, and in 10 or more in each of Salvador and Panama.

3.7.2.4 Caribbean

In 2005, the larger-company mineral exploration market in the Caribbean was valued at roughly $1 million, or less than 1% of the $4.8 billion larger-company market worldwide. The larger Canadian-based companies planned to spend about $0.2 million in the region.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in roughly 45 mineral properties in the Caribbean, about 35 of them in the Dominican Republic.

3.7.3 Europe and the Former Soviet Union

In 2005, the larger-company mineral exploration market in Europe and the former Soviet Union (FSU) was valued at $549 million (**Figure 44**), or more than 11% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the market in the region grew by more than $200 million, or by almost 60%. Europe and the FSU experienced the largest year-over-year percentage growth in larger-company exploration budgets of any region. The larger Canadian-based companies planned to spend $127 million in the region, about $50 million more than they had planned to spend there in 2004.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in roughly 280 mineral properties in Europe and the FSU (**Figure 43**).

3.7.3.1 Western Europe

In 2005, the larger-company mineral exploration market in western Europe was valued at $111 million, or roughly 2% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the larger-company mineral exploration market in the region grew by $25 million, or almost 30%. The larger Canadian-based companies planned to spend about $17 million in the region, roughly four times the amount that they had planned to spend during the previous year.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in almost 150 mineral properties in western Europe. They held interests in 50 properties in Sweden and in roughly 20 in each of Finland, Greenland and Spain.

3.7.3.2 Eastern Europe

In 2005, the larger-company mineral exploration market in eastern Europe was valued at $47 million, or 1% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the market in the region grew by $25 million. The larger Canadian-based companies planned to spend about $25 million there, about twice the amount that they had planned to spend the previous year.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in almost 90 mineral properties in eastern Europe. They held interests in more than 45 properties in Turkey and in roughly 10 in each of Bulgaria, Greece and Romania.

3.7.3.3 Former Soviet Union

In 2005, the larger-company mineral exploration market in eight countries of the FSU was valued at $375 million,[42] or roughly 8% of the $4.8 billion larger-company market worldwide. For the second year in a row, the market in the FSU grew by almost $150 million. The larger Canadian-based companies planned to spend $84 million in the FSU, up from $62 million in 2004.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in roughly 45 mineral properties in six countries of the FSU. They held interests in roughly 20 properties in Russia, and in roughly 15 in Kyrgyzstan.

3.7.4 Africa and the Middle East

In 2005, the larger-company mineral exploration market in Africa and the Middle East was valued at $884 million (**Figure 44**), or more than 18% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, exploration budgets for the region grew by more than $210 million, or by over 30%. For the third year in a row, substantial growth occurred in the market for exploration in the region. Africa accounts for almost all of the mineral exploration market in Africa and the Middle East.

3.7.4.1 Africa

In 2005, the larger-company mineral exploration market in Africa was valued at $873 million, or more than 18% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the larger-company market there grew by over $200 million, or by 30%. The larger Canadian-based companies planned to spend $195 million in Africa, equivalent to 22% of the larger-company market

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[42] The size of the mineral exploration market in certain regions of the world is underestimated because there are few data available on the extent of exploration programs undertaken by some private enterprises and state agencies.

on that continent. From 2004 to 2005, the larger Canadian-based companies almost doubled their budgets for Africa. For the second year in a row, Canadian companies planned a significant increase in exploration activity on the African continent. Nonetheless, the amount that they planned to spend in 2005 was less than half of what they had planned to spend in 1997 when Canadian budgets for the continent were at their highest.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in over 660 mineral properties located in 32 countries on the African continent. From 2004 to 2005, the number of properties in which they held interests grew by over 70. Canadian companies held interests in almost 100 properties in South Africa, in 75 in Mali, in more than 60 in each of Burkina Faso and Tanzania, in 55 in Ghana, and in 25 or more in each of Guinea and Zambia.

3.7.4.2 Middle East

In 2005, the larger-company mineral exploration market in the Middle East was valued at $11 million, compared with roughly $2 million the previous year. None of the larger Canadian-based companies planned to explore in that region of the world during 2005.

3.7.5 Asia-Pacific

In 2005, the larger-company mineral exploration market in Asia-Pacific was valued at $989 million (**Figure 44**), or almost 21% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the larger-company market in the region grew by $105 million. The larger Canadian-based companies planned to spend $300 million in Asia-Pacific, equivalent to more than 30% of the market there. In 2004, the larger Canadian-based companies had planned to spend $285 million in the region.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in more than 580 mineral properties in Asia-Pacific (**Figure 43**), about 100 more than at the end of the previous year.

3.7.5.1 Southeast Asia

In 2005, the larger-company mineral exploration market in Southeast Asia was valued at almost $200 million, or more than 4% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the market in the region grew by more than $60 million.

The larger Canadian-based companies planned to spend $26 million in the region, about twice the amount that they had planned to spend there in 2004. Aggregate Canadian budgets for individual countries were relatively small. Their largest aggregate budgets were for Papua New Guinea where they planned to spend $16 million in total.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in roughly 140 mineral properties in Southeast Asia, about the same number that they held at the end of the previous year. They held interests in about 50 properties in the Philippines and in more than 40 properties in Indonesia.

3.7.5.2 East Asia

In 2005, the larger-company mineral exploration market in east Asia, which includes China, Japan, Mongolia and South Korea, was valued at $242 million,[42] or 5% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the market in east Asia grew by $25 million. The larger Canadian-based companies planned to spend $172 million in the region, equivalent to more than 70% of the market there. They had planned to spend about the same amount the previous year.

Since the early 1990s, there has been considerable interest in the mineral potential of China. More recently, the significant growth in demand occurring in that country for many mineral commodities has provided an even greater impetus for mining companies to explore there, especially for those companies based in Canada. In 2005, 49 of the 88 companies of all sizes that planned to explore for minerals in China were based in this country.

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in almost 210 mineral properties in East Asia. As a result of growing interest in the region, the number of properties in which they hold interests increased by 50 compared with the previous year. They held interests in 110 properties in China and in more than 90 in Mongolia.

3.7.5.3 South Pacific

In 2005, the larger-company mineral exploration market in the South Pacific was valued at $523 million, or almost 11% of the $4.8 billion larger-company market worldwide. From 2004 to 2005, the market in the South Pacific grew by only $17 million. The larger Canadian-based companies planned to spend $102 million in the region, about the same as in 2004, and equivalent to 19% of the market there. All of their budgets for the region were destined for Australia. Australia ranks fifth in the world in terms of countries where the larger Canadian-based companies are the most active in mineral exploration (**Figure 47**).

At the end of 2005, companies of all sizes listed on Canadian stock exchanges held interests in over 230 properties in the South Pacific, 50 more than at the end of the previous year. More than 90% of the properties in which Canadian companies have an interest in the region are located in Australia.

3.7.5.4 South Asia

In 2005, the larger-company mineral exploration market in South Asia, which includes India, Pakistan and Sri Lanka, was valued at $22 million, or less than 1% of the $4.8 billion larger-company market worldwide. In 2005, the size of the market in the region grew by almost $6 million compared with the previous year. Although the larger Canadian-based companies held interests in a few properties in India, they reported no exploration programs there for 2005.

3.8 SUMMARY AND OUTLOOK

The year 2005, much like the one prior, was very conducive to the financing of mining companies, particularly those based in Canada. Roughly 40% of the $12 billion in equity capital raised globally by the end of the year for mineral exploration and development worldwide was for the projects of companies listed on Canadian stock exchanges. More than 60% of the 1431 companies of all sizes that planned to undertake mineral exploration programs during 2005 were based in this country.

In 2005, some $6.3 billion was expected to be spent exploring for base metals, precious metals and diamonds around the globe, up (in constant dollars) from $5.2 billion the previous year. Indicators of exploration activity were up in the majority of countries.

The larger companies (those that budgeted at least $3.7 million to look for minerals during 2005) planned to spend $4.8 billion, up from $3.8 billion, or by 26% in 2004. During 2005, the larger Canadian-based companies planned to undertake programs valued at more than $1.9 billion in Canada and elsewhere around the world, up from more than $1.4 billion the previous year. Compared with 2004, their exploration budgets increased by $485 million.

The share of the global market for exploration held by the larger Canadian-based companies rose from 38% in 2004 to over 40% in 2005. In comparison, the larger companies based in Europe and the former Soviet Union held 15% of the global market, those based in Africa and the Middle East

held 13%, those based in Australia held 12%, and those based in the United States held 9%. As a group, the larger Canadian-based companies allocated, proportionately, much more of their exploration programs to gold than the worldwide industry average. However, they allocated proportionately much less of their budgets to diamonds and PGM, but roughly the same to base metals.

From 2004 to 2005, the value of the larger-company mineral exploration market in Canada grew from $637 million to $769 million. In 2005, some 16% of all the mineral exploration programs planned by the world's larger companies were expected to be conducted in Canada, slightly less than in 2004. For the fourth year in a row, Canada, in 2005, remained the country where the world's mining companies were expected to be the most active in mineral exploration.

The number of mineral properties in which companies of all sizes listed on Canadian stock exchanges held interests grew by more than 800 during 2005. As a result, at the end of that year, Canadian companies held interests in a portfolio of more than 7900 mineral properties worldwide. Roughly 3770 of these properties were located abroad, dispersed in over 100 countries.

The larger Canadian-based companies allocated more than $640 million to exploration programs in Canada during 2005, about one-third of their total budgets, and roughly the same proportion as in the previous year. The larger foreign companies allocated a further $129 million to programs in Canada, roughly 70% of it to look for diamonds. The largest individual company mineral exploration budget for Canada was that of BHP-Billiton based in Australia. Nonetheless, Canada remains one of the few countries where the domestic industry consistently dominates mineral exploration activity year after year.

The larger Canadian-based companies allocated almost $1.3 billion to exploration programs outside Canada in 2005, compared with about $950 million in 2004. Some 108 of the 155 larger Canadian-based companies planned to be active abroad; about half of these 155 companies planned to explore only outside of Canada while about 10% of them planned to explore simultaneously in five or more countries. The larger Canadian-based companies were expected to carry out the dominant share of the exploration programs planned not only in this country, but also for the United States, Mexico, South America, Central America, eastern Europe, and East Asia. Even though Canadians are almost ubiquitous in their exploration activities, Canada nonetheless remains the country where they continue to be, by far, the most active in mineral exploration.

Some countries in Asia are growing in importance as potential new sources of large quantities of mineral materials. Since 2004, the market for mineral exploration has grown considerably in China and Mongolia. In 2005, companies based in Canada held the dominant share of the mineral exploration market in both of these countries. Forty-nine of the 88 companies of all sizes that planned to explore for minerals in China in 2005 were Canadian. During 2005, Canadian companies planned to spend $139 million in Mongolia and $80 million in China.

The world's larger companies generally account for about 80% of all global activity. Nonetheless, the smaller companies (those that budgeted at least $123 000, but less than $3.7 million, to explore for minerals during 2005) are an important and essential component of exploration and development in many regions of the world, but especially in Australia and Canada. As well, the smaller companies are of particular significance to many developing nations. In 2005, there were 24 such countries where the smaller companies were the only ones conducting commercial mineral exploration programs.

The smaller Canadian-based companies planned to spend $759 million on mineral exploration worldwide in 2005, $370 million of it, or almost half, looking for minerals in this country. In the case of Canada, adding the budgets of the smaller companies to those of the larger ones raises the proportion of all global exploration programs planned by Canadian-based companies in 2005 to almost 45% of the total activity expected worldwide. Similarly, it also raises the proportion of all of

the world's mineral exploration programs expected to take place in this country to approximately 19%, roughly the same as in 2004.

Although Canadian companies tend, on average, to have smaller exploration budgets than their competitors, they are considerably more numerous than companies based elsewhere. As a result, Canadian companies are likely to dominate global mineral exploration again in 2006, and they are likely to continue do so for the foreseeable future.

APPENDIX 1

Historical Exploration and Deposit Appraisal Statistics

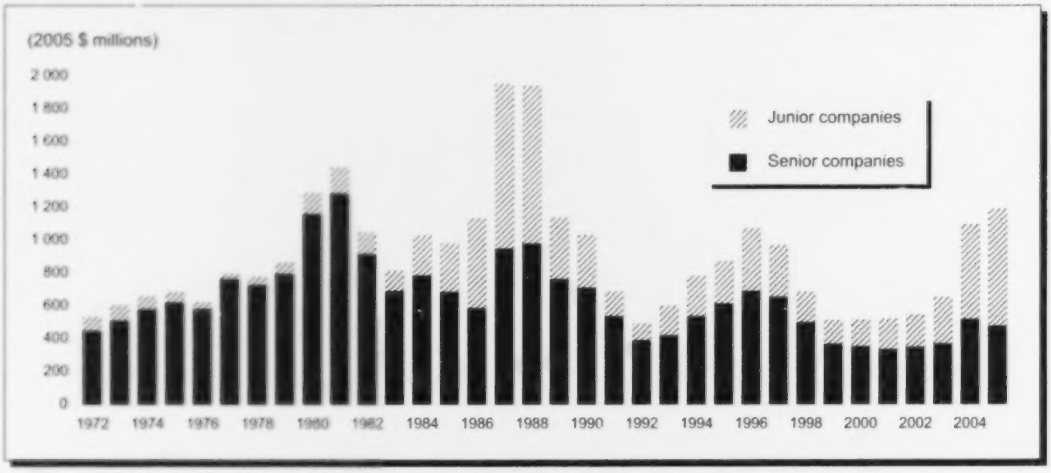
INTRODUCTION

Appendix 1 contains data and analyses that are based on pre-1997 survey definitions when only field and overhead costs were considered. While more restricted by this measure of exploration and deposit appraisal activity, the data are available over a much longer time period. The resulting time series provides useful statistics for studying historical trends in Canadian mineral exploration spending.

HISTORICAL SUMMARY

Figure 48 depicts Canadian exploration and deposit appraisal expenditures (field and overhead costs only) in constant 2005 dollars over the period 1972 to 2005. Above-normal expenditures in the 1980-82 period resulted from high prices for gold, silver and copper over much of that period.

Figure 48
Exploration and Deposit Appraisal Expenditures (1) **(Field Work and Overhead) in Canada by Junior and Senior Companies, 1972-2005** (2005 Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(1) Includes on-mine-site and off-mine-site activities.
Notes: Total expenditures for 1975-81 are overstated by an average of about 17% relative to earlier and later years because of changes to the methodology used by Statistics Canada over the years. Data for 2005 are final. Expenditures for 1997 to 2005 include both exploration and deposit appraisal costs as per the new survey definitions; up to and including 1996, most of the expenditures now included in the deposit appraisal phase were reported under "exploration."

Spending declined somewhat in 1983, but generally rose from 1984 to 1988 as a result of the introduction by the federal government, in 1983, of the Mining Exploration Depletion Allowance (MEDA). MEDA was replaced in 1989 and 1990 by the Canadian Exploration Incentive Program (CEIP). By 1987 and 1988, expenditures had reached unprecedented high levels because of MEDA and the high gold prices that had prevailed until the end of 1987. However, spending fell dramatically after 1988 and decreased until 1992 when it reached its lowest inflation-adjusted level since 1966.

Activity picked up gradually in the 1993-96 period. Expenditures increased by 118% from 1992 to 1996, and the 1996 level of $1072 million (2005 dollars) was the highest since 1989. Although exploration and deposit appraisal spending declined to $971 million (2005 dollars) in 1997, it still remained relatively strong by historical standards. However, spending dropped significantly in 1998 to $685 million (2005 dollars), a decline of 29% from 1997. After another 25% decline, the 1999 total of $512 million represented the second lowest total in almost the past four decades. The recovery began almost imperceptibly in 2000 when field and overhead spending increased by $2 million and gathered a little momentum in 2001 when spending reached $522 million. Data on field and overhead spending for the period 2002-05 show an acceleration of the upward trend as field and overhead spending eventually rose to $1191 million in 2005.

The relatively higher expenditure levels that were recorded from 1993 to 1997 resulted, to a great extent, from important discoveries of diamonds in Canada's North and nickel-copper-cobalt in Labrador. A combination of factors took over after 1997 to bring Canadian mineral exploration and deposit appraisal activity to dangerously low levels where both the resilience of the Canadian junior mining sector and the ore reserve sustainability of a number of mineral producers were tested. Metal prices constituted the primary factor as generally low demand for metals was excacerbated by worldwide economic events (i.e., the Asian financial crisis and the September 2001 terrorist attacks in the United States) and by corporate scandals (e.g., the Bre-X affair).

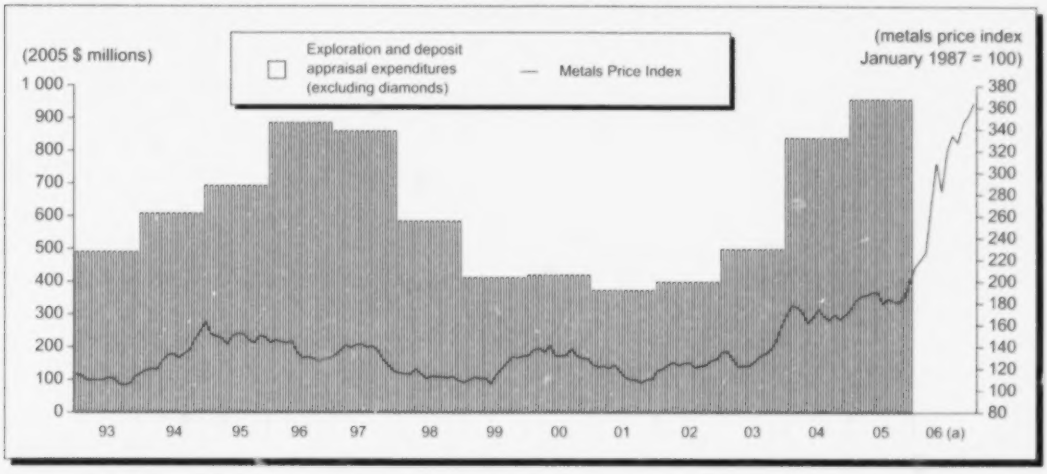
In this generally negative context, the introduction of exploration tax credits and other measures by the federal government and some provincial/territorial governments was welcome news and contributed, along with a rapidly improving metals price outlook, to the recent recovery and current effervescence in the Canadian mineral exploration sector.

METAL PRICES AND EXPLORATION AND DEPOSIT APPRAISAL LEVELS

Under normal circumstances, metal prices are probably the most important factor influencing the level of exploration and deposit appraisal activity. In early 1995, metal prices embarked on a generally downward trend, as reflected by Natural Resources Canada's Monthly Metals Price Index (based on the prices of copper, nickel, lead, zinc, silver and gold), that lasted until mid-1999 (**Figure 49**). The index then recovered for about a year before heading downward again and bottoming out in October 2001, following the September 2001 terrorist attacks in the United States and amid generally low metal prices. The recovery that began afterwards picked up considerable steam in the second half of 2003 and continued towards new heights in 2004 and 2005. In 2006, the Monthly Metals Price Index really took off, reaching a historical high in December.

As outlined in previous editions of this report, there is a relationship between the level of spending in a particular year and metal prices in earlier years. The decreasing trend in metal prices that began in 1995 was not reflected in spending levels before 1997, partly because of that relationship and partly because of the expenditures on the search for diamonds, which added an element of stability to exploration and deposit appraisal levels. When excluding diamonds, expenditures (field and overhead costs only) peaked in 1996, started declining in 1997, fell even more in 1998 and 1999, were mostly stable but low in the 2000-2002 period, and began to recover in 2003. They exploded in 2004 after the price outlook really showed signs of improving in the second half of 2003 and

Figure 49
Exploration and Deposit Appraisal Expenditures (Field Work and Overhead) in Canada, and Natural Resources Canada's Monthly Metals Price Index, 1993-2006 (Constant Dollars)



Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
(a) At press time, no data were available for field and overhead costs in 2006.
Notes: Exploration and deposit appraisal data up to 2005 are final. For comparison with pre-1997 years, the data include only field and overhead expenditures.

continued to improve greatly as prices continued to head higher. This relationship outlines the importance of improving metal prices in enticing higher exploration and deposit appraisal spending levels and, based on current metal markets, provides for a very positive short-term outlook.

EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES BY JUNIOR COMPANIES

As shown in **Figure 48**, junior companies have traditionally played an important role in Canadian mineral exploration and deposit appraisal activity. However, their contribution really expanded in 1984, a year after the introduction of MEDA, when their spending accounted for almost 24% of total exploration and deposit appraisal expenditures (field work and overhead). That proportion had more than doubled by 1987 when junior companies accounted for $1004 million (2005 dollars), or 51% of the total of $1.95 billion spent during that year. Junior spending was also very important in 1988 with almost 50% ($960 million) of total expenditures. Their proportion of total spending then started to gradually decrease until it reached 21% in 1992.

The levels of spending recorded by junior companies in the 1986-88 period are even more impressive when taking into account the fact that, during that period, considerable contributions were made by junior companies to joint-venture projects operated by senior companies. In the survey, these contributions were counted as part of senior companies' spending, thus overstating senior expenditures and understating junior expenditures.

On a yearly basis, junior spending accounted for approximately 30% of total expenditures (field work and overhead only) over the period 1993-2000. The discovery of diamonds in Canada's North and of nickel-copper-cobalt at Voisey's Bay were the two most important positive factors affecting junior spending during those years. Low metal prices, a slowing world economy, and difficulties in raising financing explain the more difficult years. The introduction of the federal Investment Tax Credit for Exploration (ITCE) in October 2000 and related provincial tax credits, around that time

and subsequently, was favourable to junior mining companies as their expenditures started to recover faster than those of senior companies. This recovery in junior spending was strong enough to increase their share of total spending (field and overhead costs) to almost 44% in 2003. The momentum continued to build in 2004 as junior mining companies accounted for 53% of all spending, the first time since 1987 (and only the second time in the history of Canadian mineral exploration statistics) that junior spending exceeded that of senior companies. Buoyed by strong metal prices and the eagerness of financial markets to fund mineral exploration activity, junior companies' spending continued to surge at a much faster pace than the expenditures of senior companies in 2005. As a result, junior company field and overhead spending represented 60% of total spending in that year, a percentage that is likely to increase in 2006 as junior companies continue to dominate the Canadian exploration scene.

EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES BY PROVINCE AND TERRITORY

Tables 19 and **20** show exploration and deposit appraisal expenditures (field and overhead costs only) by province and territory in terms of current dollars and 2005 constant dollars. Both tables cover the period 1991 to 2005, which includes the difficult period after MEDA and CEIP, the exciting discoveries of 1993 and 1994, the ensuing increase in spending up to 1996, the downward trend that brought exploration and deposit appraisal spending down to an almost historical low in 1999, and the latest upward trend that began so slowly in 2000 and that has taken expenditures to record levels in 2005.

TABLE 19. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES (FIELD WORK AND OVERHEAD) IN CANADA, BY PROVINCE AND TERRITORY, 1991-2005 (CURRENT DOLLARS)

Province/Territory	Total Exploration and Deposit Appraisal (1)														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	($ millions)														
Newfoundland and Labrador	12.1	11.1	8.9	12.4	71.1	92.5	58.4	40.8	29.3	23.1	20.7	24.0	21.5	30.5	42.6
Nova Scotia	4.5	3.3	1.8	1.7	2.8	6.9	6.7	4.8	3.6	3.0	1.5	1.8	4.0	6.9	5.6
New Brunswick	15.8	12.2	11.1	10.0	12.7	14.8	12.2	10.0	10.0	12.0	9.4	3.2	2.5	13.2	9.8
Québec	138.1	94.1	106.1	130.3	123.4	137.2	168.6	123.5	103.4	89.9	94.8	104.0	128.0	209.4	199.5
Ontario	109.7	77.4	75.6	113.0	129.7	194.9	176.5	111.3	81.1	113.7	110.2	121.0	187.4	271.1	283.5
Manitoba	29.7	32.0	27.4	40.5	32.6	41.2	40.3	29.5	22.6	27.7	28.5	29.6	27.0	35.7	50.0
Saskatchewan	31.5	25.9	53.1	50.6	43.8	50.6	49.9	57.8	36.0	40.0	34.4	35.2	43.6	63.3	131.0
Alberta	6.6	5.4	7.3	9.4	10.6	10.8	20.5	21.6	11.4	6.1	4.3	5.6	4.6	4.3	5.0
British Columbia	135.7	71.6	66.0	85.0	79.4	104.9	95.8	44.3	33.4	29.9	25.6	34.5	52.6	130.6	164.7
Yukon	16.5	9.7	19.2	25.7	39.3	46.4	40.6	17.5	12.2	9.9	7.3	7.4	11.9	20.8	49.0
Northwest Territories	31.6	42.7	100.7	149.5	172.2	194.5	150.7	114.8	61.0	45.3	75.2	59.8	45.7	99.6	85.3
Nunavut	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	33.8	57.4	58.1	71.3	85.3	177.7	165.0
Total field work (excluding overhead)	439.2	323.5	410.1	540.5	608.1	835.9	749.5	522.4	387.6	412.3	415.8	434.8	552.7	966.7	1 107.5
Total exploration and deposit appraisal (including overhead)	531.8	385.3	477.3	628.1	717.6	894.8	820.2	575.9	437.9	458.1	470.1	497.2	614.2	1 063.0	1 191.0

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
n.a. Not applicable.
(1) For comparison with pre-1997 years, the data include only field and overhead expenditures. They do not include other related expenditures such as those for engineering, environment and land access.
Notes: Numbers may not add to totals due to rounding. Data are final.

TABLE 20. EXPLORATION AND DEPOSIT APPRAISAL EXPENDITURES (FIELD WORK AND OVERHEAD) IN CANADA, BY PROVINCE AND TERRITORY, 1991-2005 (2005 DOLLARS)

Province/Territory	Total Exploration and Deposit Appraisal (1)														
	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
	(2005 $ millions)														
Newfoundland and Labrador	15.7	14.2	11.2	15.4	86.6	110.9	69.2	48.5	34.3	25.9	22.9	26.3	22.9	31.5	42.6
Nova Scotia	5.8	4.2	2.3	2.1	3.4	8.3	8.0	5.7	4.2	3.3	1.7	2.0	4.3	7.1	5.6
New Brunswick	20.4	15.6	14.0	12.5	15.5	17.7	14.4	11.9	11.7	13.5	10.4	3.5	2.7	13.6	9.8
Québec	178.7	120.2	133.6	162.2	150.3	164.4	199.6	146.9	120.8	100.9	105.2	114.2	136.0	215.9	199.5
Ontario	142.0	98.9	95.2	140.7	158.0	233.6	208.9	132.3	94.8	127.7	122.3	132.9	199.1	279.6	283.5
Manitoba	38.4	40.9	34.5	50.4	39.7	49.4	47.7	35.0	26.4	31.1	31.6	32.5	28.7	36.8	50.0
Saskatchewan	40.8	33.1	66.9	63.0	53.4	60.6	59.1	68.7	42.0	44.9	38.2	38.7	46.4	65.2	131.0
Alberta	8.5	6.9	9.2	11.7	12.9	12.9	24.2	25.7	13.3	6.9	4.7	6.1	4.9	4.4	5.0
British Columbia	175.6	91.5	83.1	105.8	96.7	125.7	113.5	52.6	39.0	33.6	28.4	37.9	55.9	134.7	164.7
Yukon	21.4	12.4	24.2	32.0	47.9	55.6	48.1	20.8	14.3	11.2	8.1	8.1	12.7	21.4	49.0
Northwest Territories	40.9	54.5	126.8	186.1	209.8	233.1	178.4	136.5	71.2	50.9	83.5	65.7	48.5	102.8	85.3
Nunavut	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	39.5	64.4	64.5	78.3	90.7	183.3	165.0
Total field work (excluding overhead)	568.3	413.2	516.6	672.9	740.7	1 001.7	887.5	621.2	453.1	462.7	461.4	477.6	587.4	997.0	1 107.5
Total exploration and deposit appraisal (including overhead)	688.1	492.1	601.2	782.0	874.1	1 072.3	971.1	684.6	511.8	514 1	521.6	546.1	652.7	1 096.3	1 191.0

Source: Natural Resources Canada, based on the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures.
n.a. Not applicable.
(1) For comparison with pre-1997 years, the data include only field and overhead expenditures. They do not include other related expenditures such as those for engineering, environment and land access.
Notes: Numbers may not add to totals due to rounding. Data are final.

APPENDIX 2

Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures

HISTORY OF CANADIAN EXPLORATION STATISTICS

In Canada, mineral exploration statistics have been collected, in one form or another, since 1946. From 1946 to 1963, Statistics Canada compiled "cost of prospecting" data for metal mines for Canada and the provinces. Companies were surveyed from 1964 to 1966, but the data were not compiled. However, using the filled-out survey questionnaires for those three years, Natural Resources Canada (NRCan) was able to estimate expenditures for that period. From 1967 to 1987, Statistics Canada compiled and published both mine-site and general exploration expenditures, as well as mine-site development expenditures and other capital and repair expenditures. From 1985 to 1987, NRCan collected detailed field work expenditures. Since 1988, NRCan has been fully responsible for the survey of non-producing entities that have any type of exploration expenses. Statistics Canada continued to survey producing firms until 1997.

A review of survey definitions was carried out in the mid-1990s to improve the quality of the survey. This revision was undertaken by the Federal-Provincial Committee on Mineral Statistics, in consultation with industry, and completed in 1997. The resulting Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Development Expenditures was designed to better describe the full mineral development cycle (**Table 21**) and to provide more comprehensive measures of investment in the Canadian minerals and metals industry. Statistics from this survey include detailed information on feasibility studies and other more technically related costs that were previously excluded. The redesigned survey also provides a clearer distinction between the primary exploration and deposit appraisal phases, and additional information on associated environmental costs. Since 1997, NRCan has been fully responsible for the coordination of the federal-provincial/territorial preliminary and forecast survey, and partially responsible for the annual survey for both non-producing and producing firms.

SURVEY PROCESS

Two questionnaires are distributed each year. For example, for the survey period 2005/06, the *2005 preliminary estimate* and *2006 intentions* survey was conducted during the last quarter of 2005 and compiled in January 2006. The more detailed *final* (*actual*) survey questionnaires for 2005 were distributed in early 2006. The results of this *final* survey were compiled during the course of 2006. A *revised forecast* survey was also conducted during the course of 2006 by contacting the project operators who had reported spending intentions in the *2005 preliminary estimate* and *2006 intentions* survey and those that had failed to do so. The *preliminary estimate* and *intentions* survey usually provides preliminary results on the year in which the survey was conducted and a forecast for the coming year that is based on company spending intentions. The *final* survey provides a wealth of project-specific information, including the types of commodities explored for, the type of field work undertaken, related overhead expenditures, the type of company involved, joint-venture partners, and other details.

TABLE 21. GENERALIZED MODEL OF MINERAL RESOURCE DEVELOPMENT

PHASE	MINERAL RESOURCE ASSESSMENT	MINERAL EXPLORATION					MINERAL DEPOSIT APPRAISAL				MINE COMPLEX DEVELOPMENT	MINE PRODUCTION	ENVIRON-MENTAL RESTORATION
		GRASS-ROOTS EXPLORATION											
	MRA	EX-1	EX-2	EX-3	EX-4	EX-5	DA-1	DA-2	DA-3	DA-4	MCD	MP	ER
STAGE	Various surveys, research and synthesis.	Exploration planning.	Regional reconnaissance and surveys.	Prospecting and ground surveys of anomalies.	Verification of anomalies and showings.	Discovery and delimitation of a mineral deposit.	Mineral deposit definition.	Project engineering.	Project economics.	Feasibility study, production decision.	Mine development, construction of processing plant and infrastructure.	Production, marketing and renewal of reserves.	Mine complex closure and decommissioning, site restoration.
OBJECTIVES	Supply information and tools required to develop the mineral potential of the nation for economic benefit, in the perspective of sustainable development.	Select target commodities. Establish exploration objectives and strategies. Select target areas and sites. Acquire claims or permits if appropriate.	Seek anomalies of interest over wide areas by various survey methods. Select the more promising targets. Acquire claims or permits.	Confirm the presence, exact location and characteristics of anomalies. Acquire claims, leases and properties.	Investigate the cause of anomalies. Find mineral showings. Acquire additional claims, leases and properties.	Discover, delimit and interpret grade, quality and tonnage of a new mineral deposit. Determine if it constitutes a mineral resource of "potential economic interest" to justify more intensive and detailed work.	Define the limits, controls and internal distribution of grades, mineralogy and mineral processing characteristics of the deposit. Acquire all data required for project engineering and cost estimation.	Determine, in an iterative fashion, the design, plans, schedules, capital cost and operating cost estimates for all aspects of the project. Establish technical feasibility and costs thoroughly and realistically.	Obtain all the information required and determine, based on corporate objectives, parameters for the economic, financial and socio-political evaluation of the project.	Diligently validate and integrate project data, interpretations, estimations, plans and evaluations to achieve MCD and production objectives. Decide on whether to undertake the mining project. Obtain permits and financing.	Complete mine development and construction on schedule and within budgets and specifications. Ensure efficient and timely mine complex start-up according to schedule, specifications and cash flow forecasts.	Achieve commercial production on schedule and meet cash flow forecasts and quantity and quality specifications. Achieve mine profitability and company survival in the perspective of sustainable development.	Restore mine site, outside plant and infrastructure to environmentally acceptable condition. Ensure the future quality of the environment.
EVALUATION METHODS	Geoscientific, mineral and economic surveys, research, compilations and synthesis by governments, research institutes, universities and industry.	Metal and mineral market research. Review of geological and ore deposit information and of the legal, fiscal and socio-political context in various areas.	Remote sensing, aerial photography and airborne geophysics. Prospecting, geology and geochemistry. Appraisal, rating and selection of anomalies.	Ground, geological, geochemical and geophysical prospecting and surveys. Compilation, appraisal and selection of significant anomalies.	Geological mapping and other surveys. Trenching, drilling and sampling. Appraisal of results, recommendations for further work, and selection of new targets.	Stripping, trenching, mapping, sampling, drilling and down-hole geophysics. Initial mineral processing tests. Environmental and site surveys. Mineral resource estimation and inventory.	Detailed mapping, sampling and drilling on surface or from underground. Systematic mineralogy and mineral processing tests. Detailed environmental and site surveys. Pre-feasibility studies.	Pilot tests, engineering design and planning. Capital and operating costs for mining, mineral processing, infrastructure, environmental protection and restoration. Technical risk analysis. Pre-feasibility studies.	Market, prices, product development and financial studies. Environmental, economic, financial, and socio-political risk analysis. Pre-feasibility studies.	Exhaustive due diligence review of all data, interpretations, plans and estimates. Evaluation of profitability, given the geological, technical, financial and qualitative risks, and the up-side factors.	Project management methods in a quality assurance perspective. Training program for personnel and detailed start-up plan to meet the requirements of this demanding period.	Production management methods to ensure continuous quality and efficiency improvements. Exploration, deposit appraisal and development of new zones or deposits on-mine-site and off-mine-site.	Mine closure and decommissioning. Environmental restoration and monitoring.
RESULTS	Maps, data bases, tools and models.	Exploration projects.	Regional anomalies.	Local anomalies.	Mineral showings.	Mineral deposit.	Deposit appraisal project.			Mining project.	Mining complex.	Mineral production.	Restored site.

MINERAL INVENTORY	UNDISCOVERED MINERAL POTENTIAL		INFERRED RESOURCE	DELIMITED MINERAL RESOURCE		MINERAL RESERVE	
	SPECULATIVE	HYPOTHETICAL		INDICATED	INDICATED AND MEASURED	PROVEN AND PROBABLE	
ESTIMATION ERROR (targeted margin of error of tonnage/grade estimates at the 90% confidence level)			± 100%	± 50% to ± 30%	Indicated: ± 50 to ± 30% Measured: ± 20 to ± 10% (often several sample grid dimensions are used in each category)	Proven (feasibility: ± 10%, mining: ± 5%)	
INVESTMENTS	Moderate	Low, but increasing multiple investments.		Larger and increasing multiple investments.		Very large industrial investment.	Full compliance
RISK LEVEL	Low	Very high, but decreasing risk of failure and financial loss.		High, but decreasing risk of failure.		Moderate to low industrial risk.	

Sources: Modified by D.A. Cranstone, A. Lemieux and M. Vallée, February 25, 1994, from M. Vallée, 1992, *Guide to the Evaluation of Gold Deposits*, CIM Special Volume 45, p. 4, and *SOQUEM Annual Report, 1976-77*, pp. 4 and 5. Revised by M. Vallée and G. Bouchard, January 2001.

For more information, please contact: Minerals and Mining Statistics Division, Programs Branch, Minerals and Metals Sector, Natural Resources Canada, 580 Booth Street, Ottawa, Ontario K1A 0E4; telephone (toll-free): 1-800-267-0452 or fax (toll-free): 1-877-336-3100.

The questionnaires for the preliminary and forecast survey were distributed in the fall of 2005 and the questionnaires for the final survey were distributed in early 2006. Some companies receive more than one questionnaire depending on the number of provinces/territories in which they are conducting activities. To avoid duplicate reporting, joint-venture participants who are not project operators do not report expenditures on such joint-venture projects. Companies are asked to report expenditures for the calendar year surveyed.

The survey is a full census of all the companies involved in mineral exploration, deposit appraisal and mine complex development in Canada. To protect the confidential data provided by the respondents, only aggregate statistics are released. However, specific information can be added when such information has already entered the public domain.

DEFINITIONS USED IN THE SURVEY

A number of definitions were introduced in the 1997 redesign of the survey to more closely reflect the realities of Canadian mineral exploration and development activities. These definitions were developed and agreed upon by federal, provincial/territorial and industry representatives, and they were tested by companies that volunteered to ensure their relevance and applicability. The following is a summary of the definitions most referred to in this report. For a more comprehensive list of definitions, along with more complete descriptions, the reader is invited to consult the *Reporting Guide* for the Survey of Mineral Exploration, Deposit Appraisal and Mine Complex Expenditures. This guide is available from Natural Resources Canada or from provincial/territorial survey partners.

Mineral Development Phases (Work Phases)

Exploration expenditures represent all activities carried out to search for, discover and conduct the first delineation (up to and including sufficient indicated mineral resources) of a potential mineral deposit, or the re-evaluation of a known deposit to enhance its potential economic value (tonnage, grade and other characteristics) in order to justify additional and more detailed appraisal work.

Deposit appraisal expenditures represent all activities carried out to bring a delineated deposit to the stage of detailed knowledge required for an exhaustive bankable feasibility study that will fully justify and fully support a production decision and the investment required.

Mine complex development expenditures include all mine development, capital (construction, machinery and equipment), repair and maintenance expenditures carried out on a mine property that is in production or committed to production.

Mine complex development includes all work and support activities carried out on a mine site to define, block out, and gain access to the ore and prepare it for production. Mine development also includes drilling, rock work and support to extend the current ore reserves by exploring and appraising the immediate vicinity of the deposits.

Location of Activity

On-mine-site expenditures represent all field activities and capital, repair and maintenance expenditures applied to exploration or deposit appraisal for an additional mineral deposit separate from the current mine reserves and located strictly on an existing mine site in production or committed to production.

Off-mine-site expenditures represent all field activities and capital, repair and maintenance expenditures applied to exploration or deposit appraisal that are not located on a mine site that is in production or committed to production. Off-mine-site includes the sites of temporarily or permanently closed mines and advanced projects not yet committed to production.

A *mine site* is an area than can be accessed and exploited from the current or committed installations; hence, the size of this area will vary depending on the commodity under consideration, attitude (horizontal vs. vertical), type and extent of the deposit(s), and the mining method(s) in use.

For a mine site to be *committed to production*, all of the following criteria must be met: (i) a production feasibility study has been completed; (ii) a formal production decision has been reached by the organization; (iii) the necessary financing is on hand or has been arranged; (iv) all required authorizations and permits have been obtained; and (v) major pieces of production equipment have been purchased or ordered.

Surface and Underground Field Surveys and Work (Includes Field Overhead)

Surface and underground field surveys and work include expenditures associated with geoscientific surveys, drilling, rock work, other field costs, and engineering, economic and feasibility studies. It includes wages, salaries, fringe benefits, food, accommodation and other services, equipment rentals, all vehicle expenses, transportation costs (for people and equipment), and all related technical activities/services such as planning, data collection, interpretation, mapping and reports. The costs incurred by the project operator and contractor(s), as well as field supervision and management costs, are also included. All surveys and work done for environmental purposes are entered under the environment section. This would apply, for example, to geochemical or geophysical surveys performed to characterize or monitor the environment.

Engineering studies include all expenditures related to the additional studies, tests and pilot work (mining, mineral processing, metallurgy, dewatering, etc.), plans, designs and appraisals required to establish the technical feasibility of a mining project.

Economic studies include all expenditures for economic studies (markets, product development, price studies, financing, etc.) required to establish the economic feasibility of a mining project.

Feasibility studies include all expenditures related to prefeasibility project reviews and to the production of feasibility studies required to develop and mine a deposit, and to obtain the required leases, permits and authorizations (excluding environmental and land access expenditures).

Environment-Related Expenditures

Environmental characterization includes all costs of environmental characterization and assessment (including environmental impact studies).

Environmental permits include all costs related to the process of meeting the legal and regulatory requirements or guidelines for environmental assessment and for obtaining permits (including preproduction permits) required for the work program under consideration.

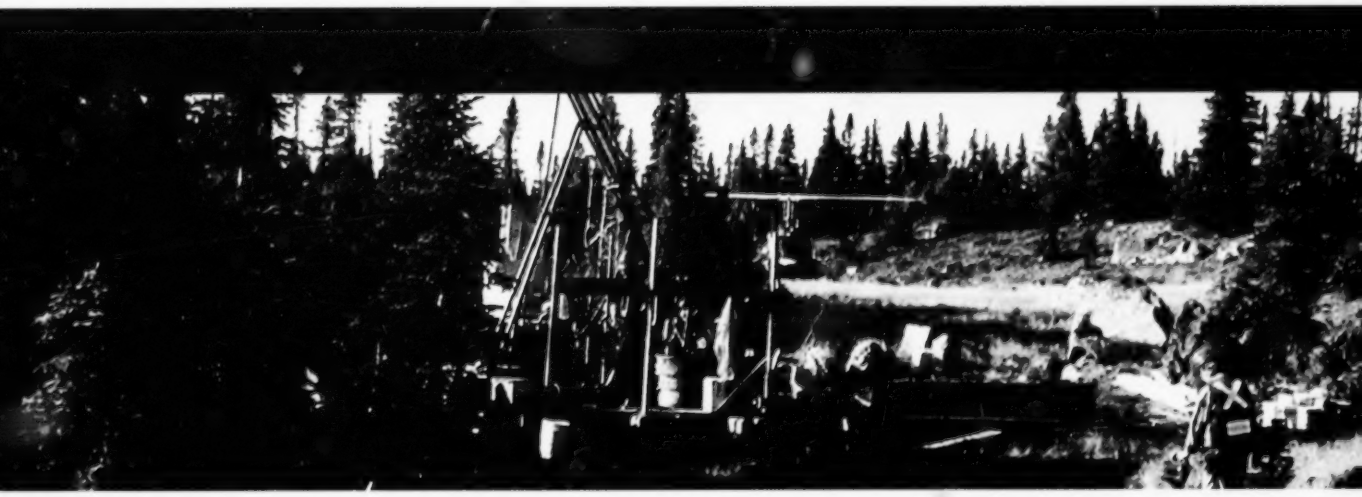
Environmental protection includes costs for monitoring (additional to normal practices) and complying with laws, regulations and guidelines related to air emissions, liquid effluents, ground pollution, and wildlife and habitat protection. Environmental fines, if any, are included in this category.

Environmental restoration includes all costs of decommissioning, reclaiming and restoring, and monitoring, if required, after the completion of exploration and deposit appraisal field work.

Land Access-Related Expenditures

Land access requirements, permits and damages include all costs related to establishing impact and benefit agreements, socio-economic agreements, and other requirements for mine complex development and mine production, and the costs of rights of way, damages and permits for exploration and deposit appraisal work, including all associated legal fees, but excluding all environment-related costs.

Capital, Repair and Maintenance Expenditures

Capital expenditures for construction, machinery and equipment include expenditures by the company for work performed by contractors or by the company for its own account, such as salaries and wages, materials and supplies, and other charges such as engineering and consulting fees. Environment-related capital expenditures for protection and site restoration are included in this category.

Non-capitalized *repair and maintenance expenditures* consist of the gross non-capitalized repair expenditures on non-residential buildings, other structures and machinery, the costs of maintaining the restored mine site, and the routine care of assets, including environmental monitoring of the restored mine site.